JUL 9 1923

Story and Pictures of Michigan Sheet Metal and Roofing Contractors' Outing in this Issue.

AMERICAN ARTISAN and Hardware Record

VOL. 86. No. 1. 620 SOUTH MICHIGAN AVENUE, CHICAGO, JULY 7, 1923. $2.00 Per Year.

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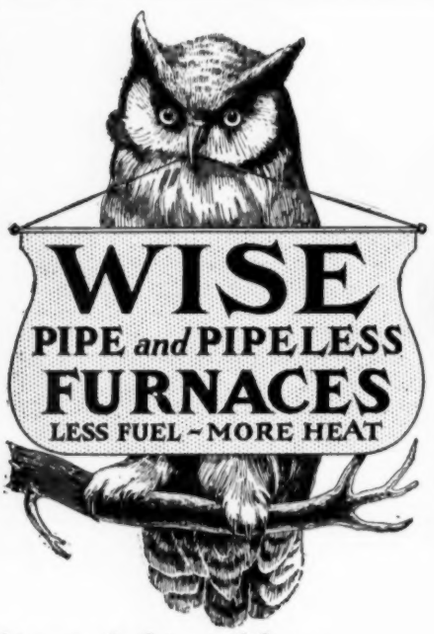

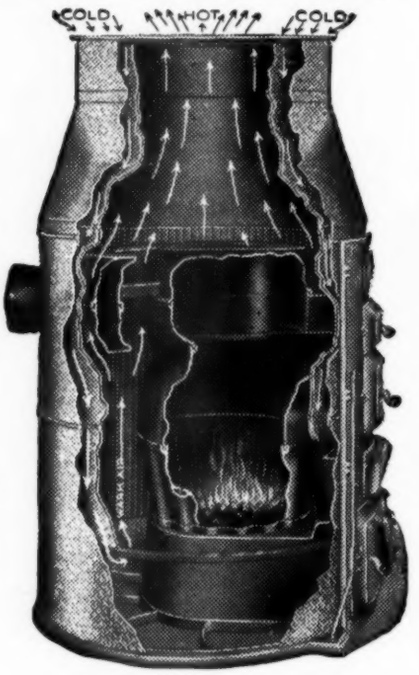

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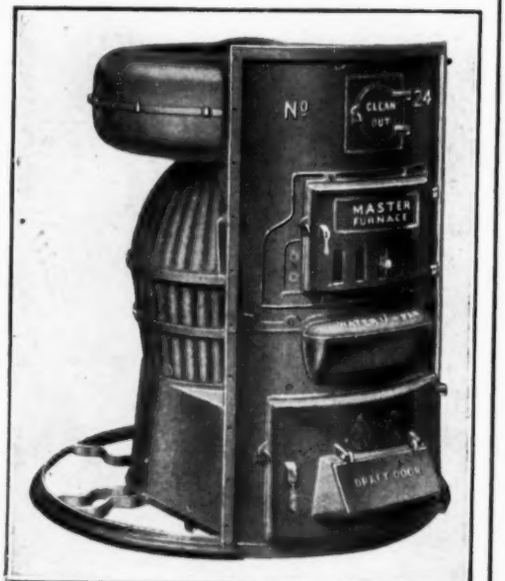

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AMERICAN ARTISAN and Hardware Record

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CONVENTION PROVES WHAT ORGANIZATION CAN ACCOMPLISH.

The convention of the National Association of Sheet Metal Contractors, which was held recently in St. Louis, is one of the outstanding examples of what can be accomplished by co-operation.

And at the same time, this association furnishes also one of the many reasons why such results as have been gained cannot be secured without an organization and full cooperation of its members.

Does anyone believe, for example, that the Board of Jurisdictional Awards would have stood out against the arguments of the carpenters and of the general contractors if the sheet metal contractors and the manufacturers of hollow metal doors and windows had not had an organization and if that organization had not been on the job to fight?

Does anyone believe that the reduction and standardization of sizes and styles in registers, fittings and many other sheet metal lines would ever be anything but a subject of discussion if there had not been an organization to get behind the talk?

Does anyone believe that in a few months we would have a thoroughly planned and practical plan for placing the warm air furnace where it ought to be—in the great majority of residences—if there had not been an organization behind the idea?

Does anyone believe that by January 1, 1924, actual printing of the great "Data Book" on sheet metal and its uses would be started if there had not been a strong organization?

And the convention itself was the best sort of proof that any fairminded man could ask as to the class of men who are members and as members are a unit in stating that their troubles and perplexities would be far greater if there had been no organization of sheet metal contractors.

Going into detail—

One man told how by advertising, regularly and persistently, he had built up a warm air furnace business from an ordinary amount to more than four hundred installations in one year.

Another told how in his state the compensation insurance rate had been reduced almost one-third—and only because of the concerted effort made by his state organization.

Another cited examples of how he had avoided pitfalls in estimating and thus had increased his profits.

Another told how by helping to organize a local association in his town he had established friendly relations with three men whom he had regarded as bad competitors.

And that is not all—

Over the lunch tables, in talks between sessions, on the auto trips, everywhere the sheet metal men were gathered, helpful information was passed along and absorbed.

That is one of the greatest benefits that comes from being a member of a live business organization.

Random Notes and Sketches.

By Sidney Arnold

During the recent sheet metal convention in St. Louis Dean Anderson read the following story which I commend to your careful consideration, because it contains so much of the really beautiful that man may enjoy and possess in this world:

A Legacy in Which You Share.

In the pocket of an old ragged coat belonging to one of the insane patients of the Chicago poorhouse, there was found after his death, a will. The man had been a lawyer, and the will was written in a firm, clear hand on a few scraps of paper. So unusual was it that it was sent to a lawyer; and so impressed was he with its contents that he read it before the Chicago Bar Association and a resolution was passed ordering it probated. And it is now on the records of Cook County, Illinois.

And this is the will of the old, insane patient of the Chicago poorhouse:

"I, Charles Lounsberry, being of sound and disposing mind and memory, do hereby make and publish this my last will and testament, in order, as justly as may be, to distribute my interest in the world among succeeding men.

"That part of my interest which is known in law and recognized in the sheep-bound volumes as my property, being inconsiderable and of none account, I make no disposition of in this my will. My right to live, being but a life estate, is not at my disposal, but, these things excepted, all else in the world I now proceed to devise and bequeath.

"Item: I give to good fathers and mothers, in trust for their children, all good little words of praise and encouragement, and all quaint pet names and endearments; and I charge said parents to use them justly, but generously, as the needs of their children shall require.

"Item: I leave to children inclusively, but only for the term of their childhood, all and every the flowers of the fields and blossoms of the woods, with the right to play among them freely according to the customs of children, warning them at the same time against thistles and thorns. And I devise to children the banks of the brooks and the golden sands beneath the waters thereof, and the odors of the willows that dip therein, and the white clouds that float high over the giant trees.

"And I leave the children the long, long days to be merry in, in a thousand ways, and the night and the train of the Milky Way to wonder at, but subject, nevertheless, to the rights hereinafter given to lovers.

"Item: I devise to boys, jointly, all the useful, idle fields and commons where ball may be played, all pleasant waters where one may swim, all snow-clad hills where one may coast, and all streams and ponds where one may fish, or where, when grim winter comes, one may skate, to hold the same for the period of their boyhood. And all meadows, with the clover blossoms and butterflies thereof; the woods with their appurtenances; the squirrels and the birds and echoes and strange noises, and all distant places which may be visited, together with the adventures there found. And I give to said boys each his own place at the fireside at night, with all pictures that may be seen in the burning wood, to enjoy without let or hindrance or without any incumbrance or care.

"Item: To lovers I devise their imaginary world, with whatever they may need, as the stars of the sky, the red roses by the wall, the bloom of the hawthorn, the sweet strains of music, and aught else they may desire to figure to each other the lastingness and beauty of their love.

"Item: To young men, jointly, I devise and bequeath all boisterous, inspiring sports of rivalry, and I give to them the disdain of weakness, and undaunted confidence in their own strength. Though they are rude, I leave to them the power to make lasting friendships and of possessing companions, and to them exclusively I give all merry songs and grave choruses to sing with lusty voices.

"Item: And to those who are no longer children or youths or lovers, I leave memory; and bequeath to them the volumes of the poems of Burns and Shakespeare and of other poets, if there be others, to the end that they may live the old days over again, freely and fully without tithe or diminution.

"Item: To our loved ones with snowy crowns, I bequeath the happiness of old age, the love and gratitude of their children until they fall asleep."

After all was he so poor and insane? If that was the world in which he lived, was he not richer, and his mind less disturbed than are some of us who go about freely and who have money in the bank? At any rate, to each of us he bequeathed something. Let us not fail to get our legacy.

* * *

"Recommendations may be useful, and then again they may not be worth much," said Bill Wise, of the Wise Furnace Company, "such as in the case of the typewriter agent.

" 'Well, sir,' asked the typewriter agent of an old customer, 'how do you like your L. C. Remingwood?'

" 'It's wonderful!' was the enthusiastic reply.

" 'Would you mind writing us a testimonial?'

" 'Certainly not,' said the proud owner, and dashed off the following:

" 'Aafted useing these atypewriter fro thre month an d Over./ i unhessitatinhtatingl y pronounce it tobe al adn moor than the M anufacturs cliam? for It. Durinb the tim e in mmy possesssion i$ three moyths i t hass mor e th an payed for itse*f id the savink ofF tim e anœ laborr.' "

Millis Talks About Use of Scrap Iron in Making Warm Air Furnace Castings

Another Interesting and Instructive Discussion, About the Ingredients of Cast Iron.

ANOTHER of L. W. Millis' exceptionally interesting and helpful talks on the construction and installation of warm air furnaces is presented herewith.

Mr. Millis explodes in his discussion, which he calls the fallacy about "furnaces that are made of pure pig iron without scrap."

How Millis Sees a Particle of Iron.

All warm air furnaces use some cast iron in their make-up. Most furnaces are constructed entirely of cast iron. All furnaces, all boilers and all stoves use cast iron for grates. It, therefore, behooves us, as furnace men, to devote a little study to the peculiar characteristics of cast iron. At least as far as our use of it is concerned. It may not be out of place to remark that all irons are good, but all are not good for the same thing.

Pure iron exists only in a laboratory and has little heat-resisting value.

All commercial irons are alloys; that is, they are mixtures of various things, all of which change their properties.

Still more remarkable, the amount of each of these ingredients affects not only the iron in the mixture, but also the other ingredients.

It is fortunate that long experience has informed earnest furnace men what mixture is best adapted for use in furnaces and stoves.

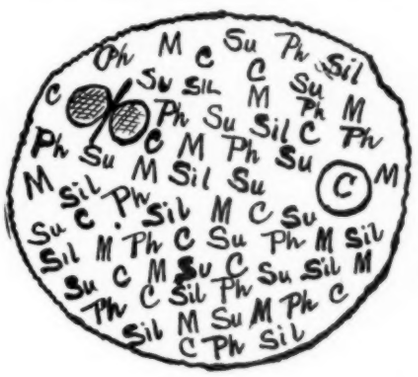
In the table shown herewith, column "2" shows quite closely the principal contents, while column "S" shows a little variation in the quantity of the same ingredients.

Table Showing Approximate Percentages of. Ingredients of Cast Iron.

	"2"	"S"
Iron	93.00	93.50
Graphitic carbon	3.00	2.75
Combined carbon	.33	.60
Silicon	2.55	1.80
Phosphorus	.70	.80
Sulphur	.02	.13
Manganese	.40	.42
Total per cent	100.00	100.00

I have here a rather fanciful sketch showing how I imagine a little particle of iron might look if highly magnified and the ingredients had alphabetical shape.

Notice that on the left hand side there are two little grains with a flake of graphite carbon between them. When those two get hot and expand they can "slip" back and



forth on that graphite—we might call it a lubricant. Over on the right hand side is a grain with a "C" inside of it. We will call that a little grain of iron with a little bit of carbon *combined* in the grain. When that kind of a grain is heated the iron expands faster than the carbon that is in it, so it has a tendency to rupture or expand, and when it cools the ruptured particles never get quite as close together as they were. It has expanded and every time it is heated it expands a little more.

But the carbon in the rupturing, expanding, crumbling grain becomes separated into very, very small particles of carbon, quite similar to the graphitic flake I described.

Consequently, we find that the oftener a piece of cast iron is heated the less the percentage of combined iron becomes. *Please remember this.*

Also remember what I said about that expanding, crumbling grain of iron. We will meet them again.

How many know why iron made from ore is called "Pig Iron"? Hands up!

Well, there are a good many hands down, so I will tell you.

Formerly when iron was produced from ore (and, in fact, often is now) it was allowed to run in sand laterals with branches along sidewise for all the world like a sow with sucking pigs. The laterals were called sows and the side pieces pigs, and to the present day the general term is "Pig Iron."

Now, column "2" is just about the ingredients of Number 2 or standard pig iron, while column "S" is just about the ingredients of a good quality of cast scrap iron.

Right here, I want to pay my respects to that class of pin-headed salesmen (at least they admit they are salesmen) who intimate that their competitors "make a very nice piece of goods, but I understand that they mix scrap with their iron."

They probably expect people to think of barrel hoops and tin cans when they say scrap.

I don't know what other people do, but when visitors come to this factory we show them how we arrive at a correct mixture of irons to produce cast iron, unexcelled for the purpose intended. Among the best furnace makers there is very, very little difference in the mixtures used.

Mr. Gudgel, here is a piece of good heat-resisting cast iron. Will you please hit it a good blow with that hammer? Now you have two pieces of good heat-resisting iron. But now we must call it scrap iron. Any piece of cast iron that *wears out* or is broken with its ingredients unchanged has all the *quality* it ever had.

Suppose a dealer has gathered together fifty tons of just such *worn out* cast iron and loaded it into Missouri Pacific car Number 10563 down in the country. Now let me tell you how we, or any competent foundry men, find out whether or not that car of so-called "scrap" will be useful to us. It is not possible to buy one brand of pig iron that will produce a desirable fin-

ished product. It is necessary to mix irons.

Owing to the multitude of reactions that all the various ingredients have, there is quite a wide range in the amounts of each that can be used and still be a good casting.

Let us suppose that we want the finished casting to analyze the following percentages:

Combi'd carbon	Silicon	Manganese
.40	2.25	.50
Sulphur	Phosphorus	
.06	.65	

We have in the yard three piles of pig iron, "A," "B" and "C," as follows:

	Combined Carbon.	Silicon.	Mang.	Sulphur.	Phos.	Cost per ton.
"A"	.30	2.05	.02	.40	.70	$30.00
"B"	.05	3.30	.03	.50	.35	31.00
"C"	.35	2.40	.01	2.20	.50	35.00
Car Scrap, 10563 ...	.60	1.80	.12	.42	.60	$16.00

If I should tell you how much silicon and manganese is lost while in the melting cupola and how much sulphur is gained, I am confident that any one of you could make a calculation showing how much of each pile must be used in order to get the required mixture. I am also certain that any of you can make another calculation, using that Missouri Pacific car Number 10563, and get exactly the same result. And when you apply what each pile cost you will find that the mixture from the three piles, "A," "B" and "C" will cost about thirty-two dollars per ton.

And the mixture from the three piles and the good scrap will cost about twenty-eight dollars per ton.

Remember, the results are identical either way. The only difference is in cost.

Who is the best foundry man? The one who makes intelligent use of remelt, broken, cast iron called scrap, or the one who by intimation tries to make people believe he "uses no scrap"? If the same test was applied to a manufacturing jeweler using "old" gold everybody would laugh at even such a suggestion.

Everybody knows that fine gold is fine gold. Iron requires a much more complicated calculation than gold; consequently, a dishonest minded, ignorant salesman thinks he has a good sounding sales talk about "scrap" without realizing that to many people he is exhibiting a badge of insincerity.

In the long run insincerity does not pay.

The fact is that practically every manufacturer of cast iron for use in Warm Air Furnaces and Boilers uses some good cast iron scrap, and every manufacturer of cast iron remelts his own misrun castings as well as the "gates" that lead the melted iron to casting in the mold.

Those parts are as truly "scrap iron" as other used iron of the same quality.

Mr. Frederick says a big storm is coming up, so we will skip out and at the next meeting we will take up the matter of these burned grates.

Good night. Hope you don't get wet. How's that? No, I mean outside.

Thatcher Furnace Company Moves General Executive Offices from New York City to Newark.

Announcing the removal from New York City to the new "Thatcher" building, St. Francis and George Streets, Newark, New Jersey, of their general executive offices, the Thatcher Furnace Company have issued a small, highly attractive pamphlet. This does not mean, however, that the company is leaving New York entirely, as the New York sales offices and exhibit rooms will remain at 133-135 West Thirty-fifth Street, where a complete line of Thatcher products is on display. The reason for this change on the part of the company was, in the words of President Charles O. Lyon, to consolidate the executive and manufacturing departments at the plant in Newark, New Jersey, in order to render more efficient service to the trade.

President Lyon says further:

"It goes without saying that closer coöperation between the executive and manufacturing units will increase efficiency and reduce delays to a minimum. It will also afford greater opportunities for creating improvements and higher standards.

"Newark, only eight miles from our offices in New York, is one of the most diversified industrial cities in the United States. It has unequaled rail and water transportation facilities, which include eight railroad trunk lines and one hundred and forty-five docks and piers."

Valuable Information Contained in International Heater Catalogue.

Particularly colorful is the catalogue on the International One-pipe Heater issued by the International Heater Company, Utica, New York.

This booklet contains a complete analysis of the International One-pipe Heater, taking up in a logical sequence the various parts of the heater itself and explaining in an easily understandable manner what their individual relations are to the whole.

The illustrations are very good and their layout in the pamphlet is especially well worked out. Radiators, humidifiers, cleanouts, etc., are all given prominence. In addition to the illustrations and reading matter which concerns themselves chiefly with the make-up of the furnace, there are also half-tones of numerous residences in which the International Heater is giving complete satisfaction.

Then, too, there are specific questions and answers relating to the furnace and its installation which are very enlightening to any one interested in this heating system.

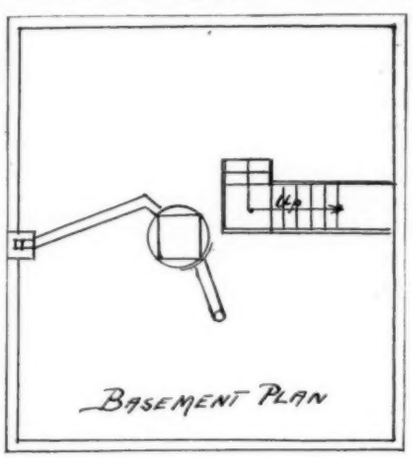
For further information write to the advertising department of the International Heater Company, Utica, New York.

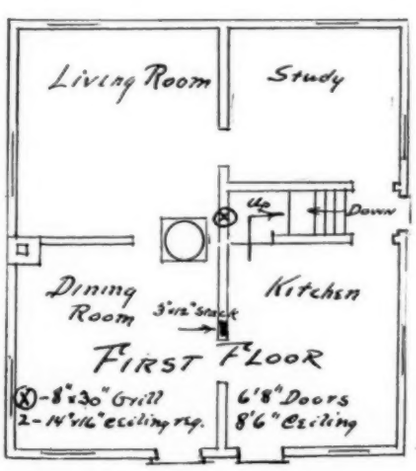
Turton Presents His Solution to Pipeless Heater Problem Discussed by Many Others.

Solves Bath Room Puzzle by Using a Separate Pipe Connected with Furnace in Unusual Manner.

HERE is George W. Turton's own solution of the pipeless heater problem which has been discussed by many installers, since he presented it in our 1922 Warm Air Furnace Special, on pages 91 and 92:

"Old Sol," the original pipeless, for the past several days has been giving a very impressive demonstration of sending a volume of heat millions of miles without the use of asbestos-covered pipes. And Messrs.





Plan Shows Turton's Layout of Basement and First Floor.

Harrison and Wilson are hot on my trail for a solution of the pipeless problem submitted some months ago.

I presumed all intended solutions had been submitted and a week prior to Mr. Harrison's request in June 16th issue to "come across" with my own idea, I sent in the first tion herewith, which will give those interested a chance to study the correct method of installation and we shall follow with an analysis of all solutions offered, so that the greatest benefit may be derived.

Study this installation carefully. If you have initiative you will see possible variations for different room arrangements.

Remember: *Every house is a separate problem.* A simple change of construction might make this installation all wrong in another house.
analysis of solutions offered. But it appears ye Editor had another solution on file and showed good judgment by publishing it instead of my analysis. I refer to the article by Mr. Barry of the Estate Stove Company.

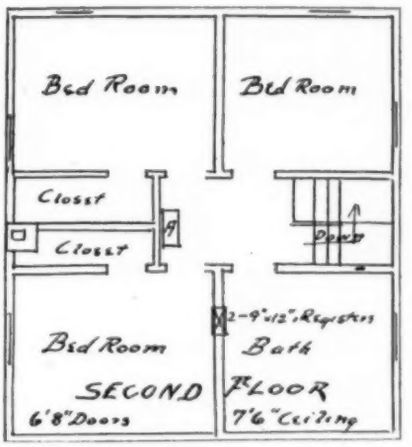
His solution is unlike any previously offered and presents thought along another line not mentioned by others; and he illustrates methods perhaps new to many installers—all worthy of analysis.

If this is not too late I suggest the editor hold up my article on analysis of Mr. McGowan's solution, and publish instead the solu-

In submitting this problem we purposely omitted stating some things to bring into action your pencils and good judgment. Hence the only dimensions given were ceiling and opening heights. However, your rule will indicate plans were drawn to a ⅛ scale. Even that you may say is immaterial, as we did not ask for size of heater to be used. True enough as to main floor, but you will notice later, size of second floor space must be known to determine size of ceiling register to be used.

Building is 25 by 28 feet and you would select a heater having sufficient capacity—that we need not discuss here.

Locate center of heater under cased opening and bear in mind that there will be little if any circulation between the living and dining rooms; and with 22-inch drop over study and kitchen doors, these rooms will equalize with the other two.



Plan Showing Second Floor Register Arrangement.

But should the study and kitchen be large rooms it would require a grille or transom over their doors when distance above door opening is more than 20 inches, assuming, of course, that the same temperature is required.

Just why was this location selected?

The foremost factor in pipeless location is a direct path for return air to the grating. In this instance it is quite simple as to the main floor. But air moves sluggishly around corners, and we cannot use the stairs door for return from second floor. But we can put an 8 by 30 inch grille at floor line in partition at "X," and we have a direct return from stairs to grating, and incidentally this location positively overcomes any objectionable floor draft if the furnace casing and grating are sufficiently large to handle the air volume necessary at the proper temperature.

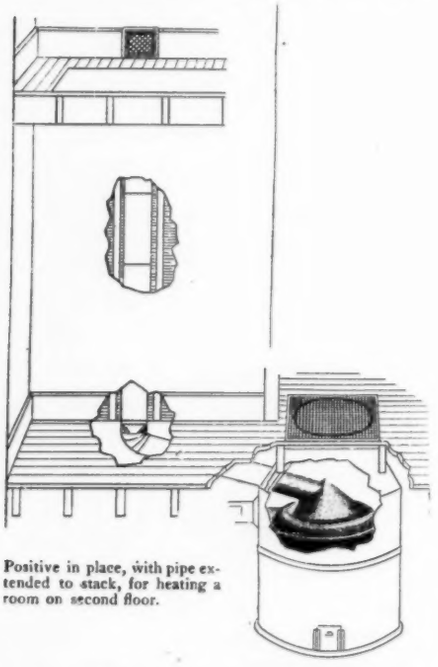
As the cased opening divides this house about equally, this location will deliver the heat equally. Should the division be unequal, it would be proper to shift the heater proportionately into the larger part.

To warm the second story, we install a 14 by 16-inch adjustable

ceiling register with valve on upper side, on each side of cased opening directly above furnace grating—that is, one in ceiling of living room and one in ceiling of dining room connecting with hall above as shown at A.

Here is where we need size of second floor space to determine size of registers. Under ordinary conditions one square inch of open area in ceiling register will warm 20 cubic feet of space above.

$25' \times 28' \times 7\frac{1}{2}' = 5{,}250$ cubic feet $\div 20 = 262$ square inches open



Positive in place, with pipe extended to stack, for heating a room on second floor.

Illustration Shows How Pipe Should Extend Through Casings.

area required. Two 14 by 16-inch metal ceiling registers have about 268 square inches open area. Note that we require only 65 degrees on second floor, so these two registers will be quite adequate.

Note also that with the shut-off valve we have fuel economy in mind, as no heat need be wasted while ventilating second floor.

This will warm second floor to at least 65 degrees; but we want 85 degrees in bath room. So we take off a 9 or 10-foot pipe (according to demands of bath room) from the casing, as shown in cut, from any position, but always over smoke pipe or furnace front when possible, to conserve casing capacity. This pipe should extend through all casings and attach to cone of black iron large enough in diameter to cover opening in usual top radiator type, cone to be about 12 inches high. Remember cone must rest on top of radiator. If elevated it is apt to act as a return pipe.

With this device you can have 100 degrees in bath room in a few minutes by closing the door, with ½ to 1-inch space under door for return air.

So far fine, and you have the sale almost closed, when the owner suddenly expects contagious sickness (which may never come, but "it might happen") and he would want "plenty heat in the bed room with window open and door shut." Then what?

Just exercise your think tank and suggest a double head register between bed room and bath. All into either side, 50-50 or none, as desired.

Note the direct return air path from all rooms on second floor toward the stairway, not across but away from the ceiling registers, which is ideal.

Nothing to hinder placing an appropriate bench or seat over these registers in the summer time, and add to the coziness of the hall.

If any further explanation is necessary we shall try to cover it in the analysis of the solution offered, to follow.

Respectfully yours,
GEORGE W. TURTON.
Niles, Michigan, June 28, 1923.

Howard Miller Says, We Like AMERICAN ARTISAN.

TO AMERICAN ARTISAN:

I have been receiving your publication for two years. We sell Sunbeam furnaces, and you carry Sunbeam advertising and besides this, we like AMERICAN ARTISAN.

I knew Mr. Stern well, and I feel that you are carrying on in the way he would have it if he were living.

Very truly yours,
HOWARD MILLER, President.
Frederic Sabin & Co., Inc.
Philadelphia, June 28, 1923.

Standardization Committee on Warm Air Registers Will Meet at Hotel Sherman, Chicago, July 10.

The Standardization Committee of the Western Warm Air Furnace & Supply Association will meet July tenth at Hotel Sherman, Chicago, and the following invitation has been issued by R. W. Menk, Chairman of the Committee:

"All parties, who may be interested, are especially invited to attend this meeting and to help formulate a program to standardize Warm Air Registers and Fittings.

"Standardization Committees from the National Warm Air Heating & Ventilating Association and the National Sheet Metal Contractors' Association will be present, together with representatives from register and fittings manufacturers.

"A very important step forward—one with genuine merit and of interest to all engaged in manufacturing, marketing or installing warm air heaters and equipment.

"Your presence will be greatly appreciated."

New List of Furnace Manufacturers of United States and Canada Now Available.

The new list of Furnace Manufacturers in the United States and Canada has been issued by Allen W. Williams, Secretary of National Warm Air and Heating Association, 52 West Gay Street, Columbus, Ohio.

Important Decision on Sales of Corporation Stock.

Treasury decision 3455 rules that where property is sold by a corporation to a stockholder, or by an employer to an employe, for an amount substantially less than its fair market value, such stockholder or employe shall include in gross income the difference between the amount paid for the property and the amount of its fair market value. The intention of this decision is to prevent corporations or employers from making fictitious sales to avoid payment of income tax.

Honeywell Discusses Induced Warm Air Circulation and Automatic Draft Control.

While Not a Cure-All, Tests of One Hundred Twenty Installations Prove That Induced Circulation with Automatic Control Is a Real Need.

M. C. HONEYWELL, President of the Honeywell Heating Specialties Company, was to have delivered an address before the meeting of the Western Warm Air Furnace & Supply Association, but the train on which he was traveling to St. Louis was wrecked, so it was impossible for him to arrive in time for the meeting.

However, the address which Mr. Honeywell had prepared is so full of useful information that we are glad to publish it in full, as follows:

In meeting with you today, it is not with the thought that we can teach you anything of a technical nature about Induced Air Circulation as applied to warm air furnaces. Rather it has been our thought that as furnace jobbers you are principally interested in the need for induced Circulation and in the benefits that accrue to owner, to the dealer, the jobber and the manufacturer because of it.

In presenting the picture of the need for the benefits from induced warm air circulation, we will draw upon our practical experience during the past season with the Honeywell method. We have been very definitely impressed by the receptiveness of the warm air trade to induced circulation, by the ready acceptance of its apparent benefits by the owner prospect, and by the united enthusiasm of the dealer and of the owner wherever an installation has been made. This picture is based upon fairly close contact with both dealer and owner in approximately one hundred and twenty separate installations that operated during the winter of 1922-1923. We have no desire to spend our money in producing, advertising and selling instruments that cannot be honestly classified as heating necessities. To that end we watched closely these 120 installations to make sure that there was a genuine need for an induced warm air method or system and that definite tangible benefits were a result. Because of our close contact with these test installations we are more convinced than ever that there is a definite need, that definite benefits do result from, and that a definite market does exist for, induced warm air circulation.

In our patent investigations made several years ago, we found traces of efforts along this line some 30 years back. And from that time down to the present, there have been haphazard attempts to evolve something along this line but apparently there has never been any one concern concentrated upon the various problems until the past several years. The idea then is not new, but has been in men's minds for a long, long time.

WHEN you decided to ask the only woman in the world to entrust her future to your protective care, in short, to become your wife, you did not counsel her to wait until you had looked over all the other women in the world, in order that you might first determine whether or not there were any other women that would suit you better as a partner in life than your prospective spouse.

Well, then, now that she has accepted you and you are henceforth responsible for her welfare and happiness, don't hesitate to send your knotty heating and ventilating problems to AMERICAN ARTISAN AND HARDWARE RECORD for solution.

Many Experiments in Past.

Unless you gentlemen have investigated the matter you would be amazed to know the number of owners and of dealers over the country, who have been experimenting with common desk fans and fans of all types and sizes in an endeavor to overcome certain conditions that exist in many warm air furnace installations. The fact that makeshifts have been used in considerable numbers seems to us to pretty definitely establish the fact that the need for induced circulation is recognized.

Warm air furnaces are installed in all types and kinds of homes and are fired by all kinds and types of men and women. These are factors beyond the control of the furnace manufacturer, jobber and dealer and yet factors that have a very direct bearing on the satisfaction delivered by the furnace.

In a straight gravity system, the size and spacing of the studding as fixed by the house builder, definitely controls the size of the wall stacks of the furnace man. The dealer probably had nothing to say about this factor—he simply takes what he finds and makes the best of it.

The location of the house, its exposure, the variability and intensity of the prevailing and of the occasional winds, all definitely affect the delivery of heat. And it is delivered heat, and that alone, that interests your customer. In reality the owner cares mighty little about the size or shape or material of any unit—he *is* greatly interested in what it accomplishes and if the results are satisfactory, he then confers upon the unit and upon its construction his whole hearted approval and recommendation.

The delivery of warm air (the thing your customer is interested in) depends upon circulation. Circulation in a straight gravity job depends upon many variables that are not subject to control and because they cannot be controlled, directly affect the degree of satisfaction experienced by the owner.

Automatic Control Assures Delivery of Warm Air.

But add to the variable action of gravity flow, the positive direction of automatically controlled induced circulation and you are assured of warm air delivered in the rooms when it is wanted.

The winds may blow from the northwest or from the southwest or from any other direction, but with an automatically controlled fan, gently, but positively, delivering a

definite volume of air through the flow pipes, your customer is certain of obtaining that which he intended to buy—delivered heat. Gravity is too slow, too uncertain, too unreliable under many conditions. Controlled positive circulation is certain, is reliable, is fast under all conditions.

Lower register temperatures are desired by all furnace manufacturers. Lower register temperatures mean lower heating chamber temperatures. But lower chamber temperatures means fewer cubic feet of air per minute, delivered through any given size of flow pipe if gravity only supplies the circulation. Instead of 175 degrees to 190 degrees at the register face, a volume of air delivered at 140 degrees would be much better. It is a real problem, however, to get such a temperature and still deliver the number of B. t. u.'s required in the rooms without excessive piping and oversize furnaces under gravity circulation. On the other hand, a properly designed and controlled fan will increase the volume of warm air delivered by at least 100 per cent. Through induced circulation it is possible to obtain this much desired condition of lower register and heating chamber temperatures.

Aids Humidification.

Through the lowering of these temperatures we deliver warm air with a greater moisture content and during the next few years a great deal of attention will be directed toward a study of ways and means of keeping the air of the home at the proper humidity. The medical fraternity all protest against the dryness of the air in our homes and induced circulation, when directed toward the reduction of high heating chamber and flow pipe temperatures, is a step toward the goal of proper humidification by keeping more moisture in the air instead of driving it out through the excessive temperatures required for gravity circulation.

One of the chief causes of deterioration in a warm air furnace is the temperature to which the castings are constantly subjected. By materially increasing the velocity of the air passed over the outside faces of the castings, we wipe off the heat quicker and reduce materially the temperature of the casting, thereby prolonging to a decided degree, not only the life of these expensive heavy castings, but the life of all parts of the furnace casing.

By at least doubling the volume of air circulated, we thoroughly mix the air in both the heating chamber and in the rooms above. Because of the increased velocity, the temperature difference between the ceiling and the floor is very materially changed. Instead of finding an excessive temperature at the ceiling level, a fairly uniform temperature holds throughout the rooms and the heat wasted under a gravity system in uselessly heating the ceiling air, is made available, in the occupied levels of the room, through induced circulation.

Induced Circulation Reduces Fuel Consumption.

In a warm air furnace operating with gravity circulation, a certain amount of coal must be burned to produce this circulation. From all information we can gather, this fuel, consumed solely to produce circulation and in no way contributing to the warmth of the house, except as it produces circulation, amounts to from 10% to 20% of the total fuel burned. Induced circulation removes the necessity for burning this fuel to produce the super-heat that makes gravity circulation. This saving in fuel will pay for a reasonable, satisfactory, induced warm air method and make available its many advantages without costs, if a three to five year period is taken. Coal at $10.00 to $20.00, in many localities, a ton, is well worth saving.

Induced Circulation, we believe to be a fine thing, but we also believe that unless the positive fan flow of the air is controlled and only permitted to operate when conditions in the furnace are favorable, there are some disadavntages to increasing the circulation beyond its natural gravity flow. To this end we have designed a Thermostat to operate in the warm air chamber of the furnace and this Thermostat controls a switch in the fan circuit; closing this electrical circuit whenever the air in the chamber is hot enough to be of heating value in the rooms and opening the electrical circuit whenever the air is too cool.

Automatic Control Important.

Should the furnace fire be low for some reason, the air in the heating chamber probably will be at a comparatively low temperature and, therefore, of little heating value in the rooms of the home. Under these conditions we allow gravity to work as slowly as it will because our Thermostat, or Furnacestat as we call it, sensitive to temperature, opens the electrical fan circuit and the fan can not operate. Suppose the fan were permitted to operate at all times. Heating comfort, as we understand it, is largely a matter of feeling or sense. True that a thermometer is used to measure temperature, but we all recognize that a room at 65° may be, so far as comfort is concerned, considerably cooler under certain conditions than it would be at the same temperature under other conditions. In the summer time we all use fans to keep cool. Not that the fan changes the room temperature one single degree, as measured by a thermometer, but because of the increased circulation of air and the consequent increase in the rate of evaporation from our bodies we feel cooler. Would not exactly the same thing hold true if a fan were permitted to increase the furnace air circulation when the air being circulated was not of sufficiently high temperature to be of heating value? We are very firmly of the opinion that induced circulation loses most of its advantages unless automatically controlled so that only air of heating value is positively delivered.

Fan Must Fit Old Installations.

If induced circulation offers advantages, the fan must be so designed as to lend itself to existing installations, as well as to new installations. The circulating instrument must be compact; the body must not offer interference to the free flow of air; the blades must not

baffle circulation when the fan is idle; the motor must be totally enclosed to protect it from dust and dirt; oil reservoirs must be ample to perfectly lubricate the instrument over a reasonable period of time. And in order that existing furnace installations may be equipped, the installation must be simple and reasonable in price. The outfit should be so designed that it is not necessary to spend the customer's money in new boots or new piping, but can be easily mounted in existing cold air returns. By keeping the cost down, the market broadens in more than direct proportion.

Through induced circulation then we are able to assure positive circulation to all rooms in the house, regardless of weather conditions and to a certain extent, we can overcome handicaps or deficiences in house construction that work against efficient and uniform circulation by gravity. Through induced circulation we are able to deliver the additional volume of air that is necessary, if we are to reduce the yearly investment and maintenance cost of a warm air heating plant by materially increasing the years of its efficient service. Through induced circulation, we are able to deliver warm air at a considerably lower temperature than can be done by gravity and in so doing, we make available a portion of the much wanted humidity. And again, by thoroughly mixing the air because of increased velocity, we cut down the temperature differences between ceiling and flow levels. We decrease the fuel consumption, thereby more than providing for the initial cost and by thermostatically controlling the operation of the fan, we only use induced circulation when it should be used and never when it should not, all without the necessity of thought or action on the part of the house occupant.

Prominent jobbers, dealers and manufacturers from 38 states are already in touch with us, regarding our method. This indicates a national interest and a national need that is groping for the solution of a vexing problem. Such manufacturers as the Fox Furnace Company, the Henry Furnace & Foundry Company, the Success Heater & Manufacturing Company, the Wise Furnace Company and many others are displaying sincere interest in our product.

We believe that the time is approaching when some system of induced circulation will be part of almost every warm air furnace installation. By its use, positive circulation can be assured to every room in a house and dealers delivered from troubles that have seemed necessary evils, because heretofore they have been unable to remedy successfully poor circulation due to adverse winds or peculiarities of house construction and the consequent furnace installation and layout difficulties.

We believe that all the better grade of furnace manufacturers and furnace dealers will, in a very short time, wholeheartedly recommend our method or any other practical system of induced warm air circulation, because they realize that their most valuable asset is their reputation. And their reputation rests largely upon the satisfaction their furnace gives to the owner in his home. Any heating essential that will insure circulation, decrease fuel bills and basement temperatures, will receive the entire support of the heating industry.

Induced circulation will be a contributing factor in bringing the condition desired by furnace manufacturers, jobbers and dealers that warm air is the best system of heating.

Is Not a Cure-All.

Induced warm air circulation is not a cure-all. It will not make satisfactory jobs that have been furnished with undersize furnaces, with poor installation work, or with insufficient cold air returns. But with the proper size furnace, fairly well installed and with proper size pipes, it will overcome the bug bear of sluggish circulation.

In our experience we have found that the dealers become interested in our product because of some job already installed, that is giving them trouble. Once our instruments have been correctly installed, the results can be measured the first day and after that period, the dealer rightly concludes that if it was a good thing for a sluggish job, it would be a mighty good thing on all jobs.

In conclusion, let me state that in the 120 observed installations last winter, there was but one failure, and that one was hopeless from the beginning.

Induced warm air circulation is worthy of the best attention of the entire warm air industry. It has many points in its favor, and with properly designed and properly built instruments, properly controlled, we know of not a single valid argument against it.

Thank You Mr. Bollen! We're Glad You Like Our Paper.

We do not wish to appear vanity struck, but we just cannot resist the temptation to indulge a little bit when our friends commend our efforts as Robert Bollen, Miles, Iowa, has done in the following letter:

To American Artisan:

Enclosed please find check No. 647 for American Artisan for one year, and obliged. The paper is getting better every year. "Some" paper! Robert Bollen.

Miles, Iowa.

Confidence Can Only Be Based on Knowledge.

There is nothing that fortifies confidence like knowledge, and nothing strengthens you so much as confidence in yourself and your goods. Often times you miss selling your best friend because you do not know your goods. He says your goods are too high and you are not sufficiently informed to refute that statement. He says your competitor's goods are better than yours and you can't show him to the contrary, and on the other hand your customer knows more about the goods you are offering to sell than you yourself know, and that's why we are often times failures as business men and merchants.

If You Go After Them Right Your Local Newspapers Will Gladly Work with You.

Fine Examples of Newspaper Publicity Gained by Local Installers to Boost Their Line of Furnaces.

IN our June 30th issue we showed examples of some of the advertising which is being done by furnace installers in cooperation with the manufacturers.

In this article we show three advertisements, two of them greatly reduced, which indicate another form of cooperation on the part of manufacturers.

Along with these articles are also quotations from news articles appearing in local papers—not the same as those carrying the advertisements, by the way—all of which go to show that when the matter is presented in the proper manner, both installers and newspaper editors can be induced to help along in the work of educating the public on good furnace installation.

ANNOUNCEMENT
Something You Cannot Afford To Miss
THURSDAY AND FRIDAY, EXHIBITION WILL BE GIVEN OF THE
Utica Super-Smokeless Furnace
AT THE CORNER OF EIGHTH STREET AND WISCONSIN AVENUE
This exhibition will be given by Mr. Svoboda of the Utica Heater Company of New York. Mr. Svoboda has demonstrated this smoke consumer throughout the country with great success. Everywhere it has been heralded as a great achievement in furnace construction.
The accompanying illustratoin shows the "inside" operation of the Super Smokeless. The radiator is not filled with smoke. A continuous stream of heated air enters at a point between the combustion dome and radiator, and causes the gases to ignite. The smoke is consumed as fuel, and extremely hot, clean flames fill the radiator, supplying more heat at a lower cost of fuel.
A Remarkable Development for Heater Construction utilizing the principle of the Bausen Burner and burning the cheaper grades of soft coal with great economy. The utmost efficiency, and without smoke.
PRANGE-GEUSSENHAINER CO.
"THE WINCHESTER STORE"
802-804 North Eighth Street
Come and see this furnace in operation and learn of its remarkable economy in price and operation. It means dollars saved.

Here is a story from the Waukesha, Wisconsin, *Daily Freeman*:

No, Not Heating Up Weather, Just Demonstrating Furnace.

Trying to heat up all out-of-doors? That's what the Freeman force decided was being done when it looked out of the window this morning and saw a furnace being set up, al fresco.

Just across from the Freeman office, where it is in plain view from the office windows, the Utica Super Smokeless Warm Air Furnace men have erected on a vacant lot, a furnace with a pipe stretching skyward.

It is the first time in Waukesha's history that it has had a furnace demonstration in the open air, but that is what is going on.

Freeman employes and many others who passed that way this afternoon have been intensely interested in the demonstration. The furnace management shovels soft coal into the furnace and adjusts it so it burns like the ordinary furnace, and soon the black smoke begins to curl out a good deal the way it does from many of Waukesha's factory chimneys. Then at the word, the carburetor is adjusted and in five seconds the black smoke stops coming. The heat radiating from the furnace increases more than 100 per cent and the smoke issuing from it is so little as hardly to blacken the air at all, when it is properly adjusted.

"The whole thing is very simple," said the demonstrator. "Everyone who ran an automobile 10 years ago and runs one now, knows the difference in the efficiency of the combustion, due to the carburetor. The modern automobile ignition system consumes a great deal of oxygen out of the air, with the result that the car runs on less than half of what it did before the carburetor was arranged so the oxygen could be burned. It is the same thing with the Utica furnace. It burns the carbon and gasses that heretofore and in other furnaces have been wasted, and it also burns much oxygen which costs the householder nothing.

"The result is that the amount of fuel burned is cut way down, comparatively, and the amount of heat derived from every pound of fuel is increased more than 100 per cent. I can safely say that anyone who once gets one of those furnaces installed would never consider trying to heat a house with the ordinary expensive, old-fashioned method."

And it is not only in the small country papers that such cooperation can be obtained, for here is an article which with the special pictures taken by the newspaper photographer, occupied nearly two full columns of space in the Cincinnati *Times-Star*:

New Heater Called Aid in Abatement of Smoke.

Air Put Through Pre-Heating Process in Improved Type of Furnace.

Test Is Conducted by Cincinnati Inspector.

Use of Device Would Eliminate 75 Per Cent of Annoyance, City Official Says.

City Smoke Inspector Gordon Rowe for the first time tested a new type of "smokeless warm air furnace," Monday afternoon, and announced after the test that in his opinion the furnace was a great success for the abatement of smoke.

"I believe that with this furnace we could abate 75 per cent of the smoke that now emanates from the homes and apartment houses of the city," said Mr. Rowe. Michael Sil-

bernagel, superintendent of the Smoke Abatement league, who was present and witnessed the tests, also declared that the new apparatus successfully abated smoke.

The new type of furnace looks very much, in its general appearance, like other warm air furnaces, but it has an additional attachment designed to abate smoke. This is a special duct in the upper part of the furnace, for heating air before permitting the air to mix with the flames at the top of the fire-pot.

"It is this pre-heating of the air that prevents smoke," said Mr. Rowe.

When the smoke inspector learned of the new type of "smokeless furnace" he installed one in the new residence he is completing at 1614 Spring Lawn avenue, Northside, adjoining his own home, around the corner, at 4692 Hamilton avenue.

In making his first test Monday he used, not the smokeless Pocahontas coal, but the cheaper, bituminous coal that ordinarily creates smoke when burned in a household furnace.

With the furnace cold, Mr. Rowe started the first fire in it Monday afternoon at 2 o'clock and for the first half hour varying quantities of smoke issued from the chimney. The smoke was dense, however, for only a small part of this time. But after the furnace became thoroughly heated the smoke disappeared, and the fire was maintained without the least violation of the smoke ordinance.

"When a furnace is cold and a fire is started, smoke inevitably will ensue, because it takes a hot furnace and hot air to consume the smoke-gases," explained Mr. Rowe. "So it is only natural that smoke issues from this furnace at the time the fire is started.

"But the remarkable thing about this furnace is that it stopped the smoke after it became hot, and thereafter.

"The furnace could be kept burning all year without making undue smoke. I look upon this test as a most encouraging development for those in Cincinnati who have been battling for years for smoke abatement. With this furnace I think we ought to be able to get rid of 75 per cent of the smoke from homes and apartments."

After the furnace was hot Mr. Rowe, assisted by Mr. Silbernagel and James A. Reilly, repeatedly fired the furnace, shoveling in fresh coal. On these occasions, according to the report of William Kirton of the Smoke Abatement league, who kept a record of the test, there would be small gusts of smoke, but no dense smoke, such as would be regarded as violating the smoke ordinance.

In explaining the new furnace Mr. Rowe said:

"In warm air furnaces not enough air comes in from below the grates to burn all the gases that create smoke. So additional air must be admitted at the top of the fire. In the old furnaces this was cold air. In the present furnace the air is heated by passing through a duct and around a hot cylinder just above the fire pot. When this hot air mixes with the gases they are burned, create more heat and abolish smoke."

Mr. Silbernagel said:

STOP THAT BLACK SMOKE!
with the SUPER-SMOKELESS Furnace
(PATENT APPLIED FOR)

OTHER HEATING SYSTEMS
BURNING SOFT COAL
waste most of the heating value of the coal. The soot discolors everything.
SUPER-SMOKELESS FURNACE
BURNING SOFT COAL
consumes the smoke as fuel by mixing air with gases. There is no soot.
Much Smoke, Little Heat, Coal Wasted.
Efficient Smokeless Heating

The SUPER-SMOKELESS Furnace burns cheap soft coal without filling the neighborhood with smoke and soot.

The smoke is consumed as fuel by the scientifically designed furnace. All the gases and carbon in the fuel are utilized for the generating of heat.

You burn less coal to heat your house with the SUPER-SMOKELESS and you also get rid of the disagreeable smoke — something no other furnace can do.

SUPER-SMOKELESS Furnaces sold and installed by

J. H. Swoboda will be here SATURDAY, MAY 12, to demonstrate this Furnace, on the lot next to the Jones Auto Sales Co. Garage.

KLUG & RADTKE

"I was highly pleased with the successful operation of the new furnace. It certainly abated smoke, once it became hot. Old type furnaces under the same conditions would have created much more smoke.

"This is the first over-feed furnace I have seen that gave such good results. There also is one under-feed furnace on the market that burns coal smokelessly, but its cost is higher.

DEMONSTRATION TOMORROW

WHY WASTE MONEY?

Smoke and Gases From Coal or Wood Cost You Real Money

CUTS FUEL COST 50%

The UTICA SUPER-SMOKELESS FURNACE

CLEAN AND SAFE

Makes Heat from the Smoke and Gases

COME AND SEE IT AND BE CONVINCED

It Burn Soft Coal Cleanly Without Black Smoke or Soot

It Burns Hard Coal, Coke and Wood Efficiently

SEE Demonstration Tomorrow on Vacant Lot at

1400 DOUGLAS AVENUE

Corner Albert and Douglas

INSTALLED BY

ARTHUR J. KROUPA

Phone 5293 2117 Summit Ave.

"I should like to see the type of furnace that was tested Monday put through further tests, so that we could give exact figures on its performance, as compared with the old type of furnace. I should like to burn several bushels of coal in this furnace, and the same amount of coal in the same length of time in a furnace of the old type next door, and keep tab on the smoke created by both. In this way we should obtain useful comparative figures. I hope we can arrange such tests, and feel sure they would verify the finding of Monday's test—that the new furnace gives superior results."

Credit Is the Governing Factor in Business.

"No element plays a more determinative part in the consumption and production of commodities than credit," says J. H. Tregoe, Secretary-Treasurer of the National Association of Credit Men. "As a medium for the exchange of commodities from seller to buyer, credit offers flexible qualities and through its clearance power permits a much larger volume of trade than could be undertaken on money exchange alone.

"Why, should we, therefore, rack our brains about mere production and distribution and seek only in these features the solution of bewildering questions? It is the credit available and the manner of its use which serve as governing factors and to the extent that we are conscious of this and shape our ways so that the chief element of credit—that is, its liquidating capacity—is conformed to and credit is not congealed by using it for improper purposes. We must strive to maintain absolute safety in our production and be reasonably sure that we are not exceeding our consumption powers.

"The laws of credit are but imperfectly known at the present time. When the revelation comes to the business of the nation that credit should be as seduously studied as the laws of chemistry or engineering in the production and distribution of commodities, we shall be looking toward more even and stable courses in our business at home and abroad than we have realized ever in the nation's history."

Do Your Customers Say This About Your Store?

I trade at your store because—

First. Because I know that I can get the goods I want at your store.

Second. Because at your store I get quick service.

Third. Because your store uses an up-to-date system and I do not have to wait long for my change.

Fourth. Because your displays are distinctive, instructive and pleasing.

Fifth. Because your store is always neat and clean.

Sixth. Because your sales people always greet me with a smile. No matter how busy they are, they never fail to notice me when I approach the counter.

Seventh. Because your sales people never try to force me to buy something I do not want.

Eighth. Because your sales people always show me courtesy and consideration. They seem to take a personal interest in my needs.

Ninth. Because your sales people often have something new to show me. When one of them recommends an article I know it is the best of its kind.

Tenth. Because your sales people always remind me of things I need. I enjoy my extra purchases even more than the ones I come in to make.

Eleventh. Because at your store, when others are ahead of me, I know I will be served in my turn.

Blow Pipe Manufacturers Are Beginning to Make Y Branches Which Have Their Sides Made in One Piece.

Branches of This Kind Require New Development of a True Section Through the Miter. Working Drawing Shows How Pattern Is Made.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri.

MANY blow pipe manufacturers are beginning to make Y branches similar to the one shown in this working drawing. The idea is that both sides are made in one piece, so that the seam will run down the line 10-11 and 9-10 of the elevation. A sharp bend is made along the line X-1 and from this the semicircles are shaped out. In branches of this kind, there is no throat, as both branches come together in point 1 and the collars that attach to the edges produce the throat.

First, draw the base line for section A, as 9-10, and then draw the angles for the branches, making the height at pleasure, and then draw the angles of branches 1-10 and 1-11 to suit the diameters of those pipes, as at C and D. In order to proportion the area through the bend, take one-half the diameter of the small branch C or the distance 4-10 and set as 9-X. This point X will be the starting point for the bend line, and both branches will be laid out from this line. After this describe the sections B and C in the same number of parts we have in A. From X draw lines in branch C to points 1-2-3-4 and then triangle the remainder as 4-5, 5-6, 6-7, etc. Observe that the point X in A establishes a part of an arc, and hence, the remainder of the section is divided in three parts to correspond with section C.

From X draw lines to the point 1-2-3 of B and after this triangle the lines as 3 to 4, 4 to 5, 5 to 6 and 6 to 7.

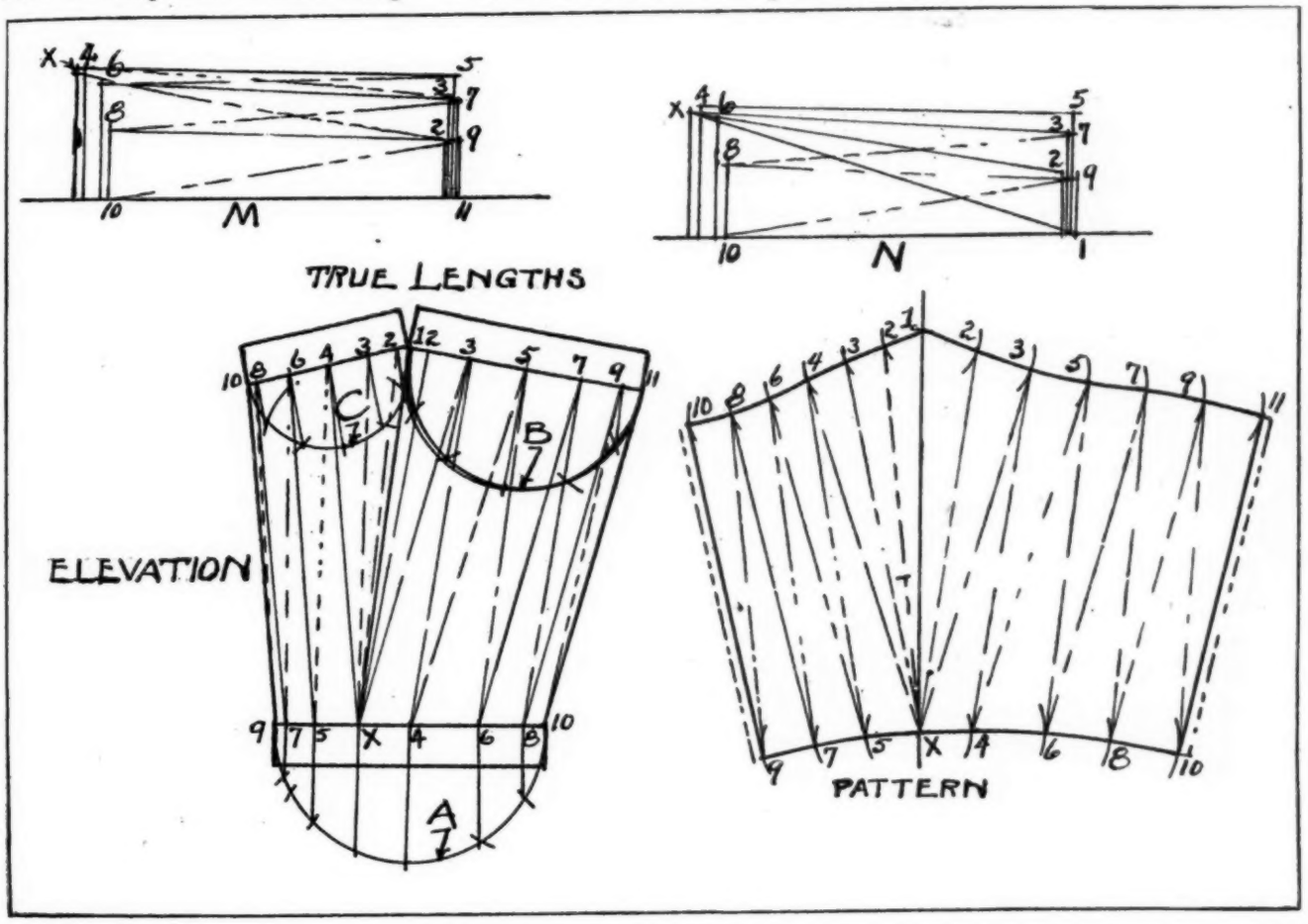


Illustration Shows "Y" Branch in Which Both Sides Are Made in One Piece, a Method Being Adopted by Blow Pipe Manufacturers Now.

Branches of this kind require new development of a true section through the miter, as the old style branches do, while true lengths are developed in much the same way. The one at N is for the small branch and at M is for the large branch. Developing the small branch lines we pick them as X-1-2-3 and set

them on a horizontal line. Then from the starting point we erect a line equal to the length X in section A. On the other ends, we erect lines to equal those half diameters in section C, as 2-3. After this pick the line 4-5 and from the last point, 4, we set over on a horizontal line and erect a line equal to the line 4 in section C. After this we pick line 5-6 and from 5 on base line we set over and erect a line equal to section C, line 6. Repeat this until lines 8-9 and 9-10 are determined. The true lengths for the smaller prong are developed in the same way and are set in diagram M.

To start the pattern, draw a line and make it equal to X-1 of N, and then pick the girth as 1-2 from B also 1-2 from C and describe the small arcs from point 1 in the pattern. In the same way pick the spaces from A as X-4 and X-5 and set them in pattern as the arcs show. From here on we develop each branch separately, working the smaller first. So pick the true length X-3 and describe this, using X in pattern as the center, cross arcs in point 2. Then describe arc 3 and pick true length X-3 and describe this, using X in pattern as the center. Repeat this with point 4 and then pick line 4-5 from N and, using 4 as center in pattern, cross arcs in point 5. Then strike arcs 6 and 7. Cross these with true lengths 5 and 6 and 6 and 7 from N. Continue in this way until points 9-10 are established. Repeat this same process for the large branch, only using the true lengths from N and the girth spaces from B and A.

This gives the net outline of the pattern and edges for riveting on the ends must be allowed extra, as well as for riveting to the collars. To assemble this branch, bend the line 1-X in a cornice break, or over a stake quite sharp, seeing to it that the bend is considerably deeper at the top than at the bottom where it should hardly be noticeable, because this base must form a complete circle and have no off-sets. Then shape up the sides to form semi-circles, taking care that the shape is as near to the actual fittings as possible, because that makes it easier in riveting together and fitting the corners on. Sometimes it is necessary to wrap a wire around the small ends, in order to hold them in position while putting the collar on, because they are apt to enjoy an elongated shape. If the collars are riveted on to this elongated shape, it is rather difficult to straighten them out and, therefore, the workman must always see that the ends are perfectly round before he goes ahead too far.

Zinc Used for Roofing Purposes Has Made Rapid Headway in America Recently.

Although Universally Used for This Purpose in Europe for 100 Years, It Has Been Given Scant Attention Until Recently Here.

NOW comes zinc roofing! After tests extending over a long period, the New Jersey Zinc Company is now marketing Standing Seam Horse Head Zinc Roofing and has made rapid headway in introducing this product to the trade.

For more than 100 years zinc has been the almost universally used roofing in Europe, but until recently has been given scant attention in America. In Europe the service given by this roofing material has extended over periods ranging from forty to 120 years, with few or no repairs.

Long wear is the paramount feature claimed by the manufacturers of Standing Seam Horse Head Zinc Roofing. It is rolled from Horse Head slab zinc, which enjoys a unique reputation because of its purity. Since zinc cannot rust, there can be no danger of early deterioration from that cause. On the other hand, this metal takes on a protective coating, dull gray in color, soon after being weather exposed, which renders it further impervious to the elements. Artificial protection is not needed.

Low Initial Cost Appeals.

Other features claimed by the manufacturers for Standing Seam Horse Head Zinc Roofing include its comparatively low initial cost, simplicity of application, small, if any, maintenance expense, long years of service, and unusual economy. In fact, the manufacturer regards it as the most economical of any durable roofing.

As the instructions for applying show, Standing Seam Horse Head Zinc Roofing is practicable for use on any building the roof of which has a slope of two or more inches to the foot. It is being recommended for such structures as residences, offices, apartment houses, railway stations, municipal buildings, garages, factories, farm buildings, etc.

This product is declared to be particularly desirable for industrial use where efficiency is demanded. The maker claims that this roofing does not leak, is fire and lightning resistant, and contributes to low overhead costs.

Sold on Reputation.

Already some of the large jobbers have ordered initial stocks and appear sanguine that this new roofing material will soon prove to be in increasing demand. One wholesale house in the east received an order for material sufficient to cover forty squares (each square being 100 square feet) of roofing surface, long before the first shipment was made. The same firm stated that the field appears unlimited for the consumption of this material.

Standing Seam Horse Head Zinc Roofing is shipped in casks, each containing the quantity sufficient to cover 100 square feet of roofing surface. Each cask contains zinc nails and clips, and full directions, step by step, for applying. The directions embody diagrams which further simplify the task of the roofer.

A. E. Mervine, Assistant Sales Manager of the New Jersey Zinc

Company, in charge of the rolled zinc sales division, declares that the new product offers roofers an opportunity to increase their profits materially as well as to give their customers the best possible roofing service.

These directions for applying accompany each shipment:

1. Standing Seam Zinc Roofing can be used on any roof that slopes not less than two inches to the foot.

2. See that the roofing surface is properly sheathed with thoroughly seasoned lumber, laid close, free from ridges and well nailed with the nail heads flush with the surface.

3. Standing Seam Zinc Roofing must not be applied when the roofing boards are wet or damp.

4. The roofing surface should first be covered with a good quality of red building paper or equal, properly nailed with galvanized nails.

5. Start the zinc strips from ridge to eaves and the standing seams.

6. Put clips every eight to ten inches.

7. If strips must be joined end to end, use a locked and soldered seam.

8. Soldering should be done as follows: Use half and half solder, cut or killed acid flux and a moderately hot iron. Do not have iron in contact with zinc longer than is necessary to cause the solder to flow.

9. Standing Seam Zinc Roofing should not be laid when the temperature is less than 40 degrees.

10. When job is finished, remove all nails and scrap pieces and leave roof clean and shipshape.

Nails and clips are supplied with each cask of roofing.

H. Bitterlich Wants Catalogs on Sheet Metal and Auto Radiator Supplies and Tools.

H. Bitterlich, Littleton, Colorado, has opened a sheet metal and auto radiator repair shop and wishes catalogs from houses that sell supplies and tools for these lines.

Many Useful and Interesting Souvenirs Were Presented at St. Louis Convention.

Those who came away from the great St. Louis Convention of sheet metal contractors without a souvenir of some sort, had himself to blame, for there were all sorts of them, and the men in charge were certainly liberal in their distribution.

One of the first things that came to our notice was an elephant floating gently down on the writer's head. Upon inspection it was found to be of rubber and bore the announcement that in Room 110 the Miller Rubber Company, Akron, Ohio, had some excellent rubber mallets for free distribution. Preston Parish was in charge.

That ubiquitous, pleasantly plump paint man, who goes by the name of Wilberding, had some very fine desk calendars which he gave out to his special friends and to those to whom he hoped to sell a barrel of Tin-O-Red.

A convention of sheet metal men and furnace installers would not be a real success unless the Meyer folks in Peoria distributed some sort of a souvenir, but this time they exceeded expectations, for they had a copper bell to wake up the sleepy ones; a loose-leaf note book and cartridge pencil.

Art Lamneck showed his sympathy with the sweltering people by giving each one a nice fan—and then the weather turned cold.

Harry Jacobs, of the National Paint & Varnish Company, certainly made the smokers happy, for he had a very shiny match safe for each one.

If the men did not make notes of what happened it was not the fault of Haynes-Langenberg, for every one was provided with a notebook which also contained a lot of useful information.

The Hart & Cooley folks evidently feel that 1923 is going to be a prosperous year for their friends. They presented, through Ralph Blanchard, a handsome leather fold to hold bills (money) and other valuable papers.

The Copper & Brass Research Association recognized a good opportunity. If copper will stand against the cigars that some sheet metal men smoke—not to mention stogies—it will stand against any atmospheric conditions, and Manager W. A. Willis knows that it will, so he presented very handsome little ash trays to them. But why did he give them to the ladies? They surely don't smoke, do they?

For a real true friend, however, give me "Trow" Warner, of the Tuttle & Bailey register folks. He knows what a man needs more than anything else when his pants buttons fall off. A nice, compact sewing outfit—small enough to carry in your vest pocket—was his gift.

John D. Caldwell Forms New Firm of Steel Products Sales Agents.

The following letter has been received:

To AMERICAN ARTISAN:

Mr. John D. Caldwell, formerly Manager of Sales of the Chicago office of the Brier Hill Steel Company, has succeeded to the interest of Mr. H. C. Perrine in the representation of the United Alloy Steel Corporation, Stark Division, and this representation will be continued by the partnership of Caldwell and Maloney.

Our principals are manufacturers of a complete line of sheets in all grades and they are self contained from the ore to the final pass. They are also sole manufacturers of the well known rust resisting, anti-corrosive Toncan metal.

With the assurance of the closest attention to the requirements to the trade, the new associates hope for a continuance and increase of past business relations through the additional facilities now at our command.

Very truly yours,
CALDWELL & MALONEY.

Mr. Caldwell has many friends among the sheet metal men in the Chicago territory and in his new affiliation will no doubt still further increase his large circle of business friends.

Snappy Shots at the Michigan Outing: 1.—"Some" Chickens Behind the Wire at the Ball Game. 2.—At the Traveler's Show. 3.—He Sure Did Swat the Ball. 4.—Snappy Throw to Third. 5.—Mrs. Harry Rhodes Goes Fishing. 6.—Foul Ball. 7.—Ross Strong Bossing Newt Pierson. 8.—Meulenberg's Fancy Dive. 9.—Henry, Howard and Cornelia May Sikkenga. 10.—Newt Pierson Signing off SKNDL, Detroit. 11.—The "Primrose" Minstrels—Bill Laffin, Dave Farquhar and Trow Warner. 12.—The "Whole Show." 13.—What's Blanchard Grinning at? 14.—Johnnie Johnson and Mrs. Bill Laffin Take Miss Cohn Canoeing. 15.—Three Register Men—Stearns, Farquhar, Warner—Apparently Enjoyed Their Island Home. 16.—Hugh Doherty and the Twins, Hugh and Tom, or Tom and Hugh. 17.—A Bunch of Daisies. 18.—Our Honeymooners Properly Chaperoned by the Conway Girls. 19.—No, Newt's Sox Are Not Rolled. 20.—Ladies' Canoe Race. 21.—Newt Pierson, Ross Strong, Doc Weatherly, Harry Snow, Ralph Blanchard, Charlie Heth and Harry Rhodes, Looking Pretty. 22.—The Ladies Can Row Also.

'Twas Some Outing the Michiganders Had at Gull Lake Last Week.

Michigan Sheet Metal Men and Travelers with Wives, Sisters and Other Fellows' Sisters Sure Did Have a Good Time.

FOLKS, if you want to know what real hospitality and good fellowship are, just attend one of the summer outings of the Michigan Sheet Metal and Roofing Contractors' Association, and I'll wager you will do just what I am going to do—never miss another.

The only fault I can find with the Michigan outings is that they come only once a year and last only two days. And it is a miracle how much fun can be crowded into two short days.

This year's outing was held at Gull Lake, Michigan, between Kalamazoo and Battle Creek, June 29 and 30. The party, over two hundred in all, was housed in the main hotel, in small cottages around the hotel and out on an island in tents, with every modern "inconvenience," but who cared what the sleeping quarters were like? Most of us didn't have the time or the inclination to sleep—or if we did want to sleep, how could we, with all the serenading parties?

It wasn't a dress-up affair—not a bit of it. Why, even "Newt" Pierson, the fastidious, wore his golf knickers and fishing sweater, except when he got all "dolled up" for the evening dance Friday.

The island must have been a live place, for some of the "inhabitants" were Trow Warner, Dave Farquhar, Joe Stearns, Ralph Blanchard, E. A. Scott and a bunch of the "Travelers." Why, Joe Stearns was so crazy about his island home that he wandered around half the night Friday looking for oars so he could row himself over, as he had missed the last launch.

Bill Laffin was "wise"—he brought his charming bride with him, so they didn't banish him to the island.

Now to get back to the beginning. We who came up together on the train from Chicago—there were six of us, or rather seven, including E. A. Scott of New York, Mr. and Mrs. Bill Laffin, Trow Warner and Dave Farquhar of A. E. F. fame, J. F. Johnson and Miss Etta Cohn (myself) of AMERICAN ARTISAN—were met at the station in Kalamazoo by John and Tony Meulenberg, in their new, good-looking Hudsons, and driven over to Gull Lake, where the crowd was gathering. Frank Ederle's hearty "Hello, there, good to see you!" sounded natural, and after registering we were directed to Homer Brundage's "department." where we received our badges and credentials.

Then came the ball game between Detroit and a team selected from Saginaw, Flint, Bay City and Lansing, the latter team in charge of Klopf from Saginaw, and Detroit captained by Hugo Hess. Umpires, Newt Pierson and Vic Heather; scorekeeper, Trow Warner.

The ball field was laid out on an honest-to-goodness pasture, some hundred feet above "sea-level" but the ladies as well as the men braved the steep climb and the hot sunshine to see the Saginaw and Battle Creek team win a hand fought game from Detroit.

A kind, sad faced cow watched the game from deep left field and I believe helped Striewski of Detroit and Hartsburg of Saginaw-Battle Creek look for lost balls in the long grass.

Lennart secured nine strikeouts and Hess five.

Home runs by Conway, Dempsey, H. Hess and Striewski for Detroit and Lon Shouldice for Saginaw-Battle Creek.

The game went five innings—the lineups as follows with Cook replacing Olwang in the third. Olwang was stung on the left elbow by a pitched ball.

Detroit	1	2	3	4	5	R
Marshall, T., 2nd.	0	0	0	0	0	0
Conway, s.s.	1	0	0	0	0	1
Dempsey, 1st	0	0	0	0	1	1
Hess, R., p.	1	0	0	0	0	1
Updike, 3rd	0	0	0	0	1	1
Olwang-Cook, r.f.	0	0	0	0	1	1
Hess, H., c.	0	1	0	0	1	2
Marshall, D., c.f.	0	0	0	0	0	0
Striewski, l.f.	0	1	0	1	1	3
Total	2	2	0	1	5	10

Saginaw-Battle Creek	1	2	3	4	5	R
Lennart, p.	0	0	1	1	0	2
Lang, c.	1	0	0	1	0	2
Klopf, 1st	0	0	0	1	0	1
Hartsburg, l.f.	0	0	0	1	0	1
Jones, 2nd	0	0	0	1	0	1
Daly, 3rd	0	0	0	1	0	1
Weiss, r.f.	0	0	0	1	0	1
Darlington, c.f.	0	0	0	0	0	0
Shouldice, L., s.s.	0	0	1	1	0	2
Total	1	0	2	8	0	11

From 3:30 to 5:30 we danced at the Pavilion to the "jazzy" music furnished by L. A. Spaulding and his orchestra, not "tinkers," but nevertheless pretty good musicians.

Boating of all kinds—canoes, row boats and launches—kept us busy and happy between whiles, and for the evening dance we all really "dolled up." As I said before, even Newt Pierson looked like a fashion plate. At midnight the dancing ceased and the musicians left for town, but that did not mean that the music was over, as the actors on Saturday's program started to rehearse, and well, possibly, it might be better not to try to tell all about the fun around camp.

Saturday morning's program officially opened with the ball game between the Saginaw-Flint-Bay City-Lansing team and the Grand Rapids - Kalamazoo - Battle Creek-Jackson team for the state loving cup.

It was kind of hard getting started on time as the lake breezes and extreme quietness of the evening before made everybody rather sleepy but before long the whole gang was on the job and Vic Heather, who officiated behind the plate, started them off.

The Battle Creek outfit ran away

with the victors of Friday's game, Lemart scoring the losing team's only run with a home run smash in the second.

Lineup and score as follows:

Battle Creek	1	2	3	4	5	R
Brundage, c.f.	0	0	1	1	0	2
Reule, r.f.	1	0	1	0	0	2
Shouldine, L., 1st.	1	0	1	0	0	2
Jensen, l.f.	0	0	0	0	0	0
Coleman, s.s.	0	0	0	0	0	0
Fitzgerald, c.	0	0	0	0	0	0
Dellman, 3b.	0	0	0	0	0	0
Behler, 2b.	0	0	1	1	0	2
Shouldice, J., p.	0	1	0	1	0	2
Total	2	1	4	3	0	10

Saginaw	1	2	3	4	5	R
Nydan, c.	0	0	0	0	0	0
Dempsey, p.	0	0	0	0	0	0
Klopf, 1st.	0	0	0	0	0	0
Lennart, 2nd.	0	1	0	0	0	1
Lange, 3rd.	0	0	0	0	0	0
Hess, s.s.	0	0	0	0	0	0
Updike, r.f.	0	0	0	0	0	0
Cook, l.f.	0	0	0	0	0	0
Total	0	1	0	0	0	1

After the ball game we played around—went riding on the lake, visited, ate lunch and then came the big event of the day, the Entertainment by the Travelers' Auxiliary.

A pretty and touching incident occurred when we were all assembled for the entertainment. President Albright, in behalf of the Contractors and the Travelers, presented a beautiful bouquet to Mrs. C. H. Ederle, wife of one of the pioneer members and mother of "our Frank." Mrs. Ederle, who had just recovered from a serious illness, drove over Saturday morning from her home in Battle Creek, and was quite the "lion" of the day, because everybody knows and loves "Mother Ederle."

"Cap" Doherty started the entertainment by telling some mighty good stories about some of us folks —some were true, others weren't, but all were good—and if you have ever heard "Cap" Doherty, you'll agree that it isn't so much what he says as how he says it that counts.

"Newt" Pierson and his radio receiving station came next and convulsed the audience. Funny, how Newt always manages to tune up on the "SKNDL" line.

And then the Tee-Bee trio—Warner, Laffin and Farquhar—better than the Primrose Minstrels, sang, danced and poked fun at us. Can't help saying here that while Warner and Farquhar are nifty looking black-face men, Bill Laffin sure is a mean looking "cuss" in his make-up and you would never recognize our "always smiling" Laffin.

The water sports took up two hours, and included:

Ladies' fancy diving. — Winner, Miss Blanche Conway, Jackson, and R. B. Strong, Coldwater.

Men's fancy diving.—Winner, T. Meulenberg, Kalamazoo.

Any one who wishes photographs of any of the pictures shown in the large plate on page 26 may obtain them—free of charge, of course—by writing to AMERICAN ARTISAN, *simply asking for the number in the lower right hand corner of the picture wanted. Photos will be somewhat larger.*

Ladies' canoe race. — Winners, Mrs. R. B. Strong, Coldwater, and Mrs. A. Coleman, Kalamazoo.

Men's canoe race.—Winner, A. Coleman, Kalamazoo.

Ladies' boat race.—Winner, Miss Blanche Conway, Jackson.

Men's boat race.—Winner, I. Sikkenga, Kalamazoo.

Swimming races. — Winner, T. Meulenberg, Kalamazoo.

The tub race had to be called off, because the committee, being sheet metal contractors, refused to use wooden tubs and brought heavy galvanized wash tubs, which naturally sank.

Many beautiful prizes were given in all races.

"Our Bride."

Wonder whether the committee overheard Mrs. Laffin when she mentioned the fact that poor "Bill" would have to eat in a restaurant Sunday, as she hadn't bought anything for dinner and it would be too late to get anything when she reached Chicago, for when the heavy packages given each and every lady in the special drawing were opened they were found to contain canned goods of all kinds—sardines, canned soups, cereals, pickles, etc.

The committees which are listed below worked so faithfully and accomplished such wonderful results that they surely do deserve a special vote of thanks, though the Michigan outings are such great successes, because each and every person attending is a committee of one to see that everybody has a rip-roaring, glorious time.

We were tired, yes, we were sleepy, yes, but we sure were a happy bunch who said "good-bye" to each other Saturday afternoon—happy because we had had two wonderfully good days together; and happy because we had been fortunate enough to be at another Michigan outing.

Committees.

Homer Brundage, general chairman.

General Entertainment — John Meulenberg, William U. Metzger and Guy E. Fitzgerald.

Water sports — William Lusk, John Meulenberg, N. L. Pierson, Jr., and Pete Jones.

Prizes—William U. Metzger and Ira Miller.

Baseball — J. A. Shouldice and Markham Fitzgerald.

Judges — Antone Meulenberg, Lon Shouldice and W. E. Dunbar.

Officer of the Day—John Darlington.

Police force—F. J. Ruele (in uniform).

Registration of Eighth Annual Outing of Michigan Sheet Metal and Roofing Contractors' Association. (As Furnished by Secretary Ederle).

A. S. Albright and wife, Saginaw.
D. Jacob Bauer, Saginaw.
Charles Baughman and wife, Dexter.
John Behler and wife, Grand Rapids.
Mildred Bell, Grand Rapids.
A. J. Berschbach, wife and son, Detroit.
R. W. Blanchard, Chicago.
Harry Bowers, Battle Creek.
Mildred Brobst, Grand Rapids.
Mrs. Brucks and son, Detroit.
H. F. Brundage, wife and four children, Kalamazoo.
W. W. Chalk, Detroit.

Etta Cohn, Chicago.
A. H. Coleman and wife, Kalamazoo.
Charles Conway, wife and daughters, Jackson.
Albert Conway, Jackson.
H. F. Cox, Grand Rapids.
F. T. Daly and wife, Jackson.
Misses Francis and Mary Daly, Jackson.
John Darlington and wife, Battle Creek.
Kenneth Darlington and wife, Battle Creek.
Frank Dempsey, wife and daughter, Detroit.
H. Delnay and wife, Grand Rapids.
C. H. Ederle and wife, Battle Creek.
F. E. Ederle and wife, Grand Rapids.
D. R. Farquhar, Chicago.
W. A. Feltenberger, Otsego.
Guy E. Fitzgerald, wife and daughter, Battle Creek.
Floyd Harrington, wife and son, Lansing.
Victor U. Heather and wife, Grand Rapids.
Frank Herzberg, wife, son and daughter, Saginaw.
R. Hess, Detroit.
H. J. Hudson, Detroit.
Hugo Hess, Detroit.
Charles Heth and wife, Grand Rapids.
Chris Jensen and wife, Battle Creek.
J. F. Johnson, Chicago.
M. L. Jones, wife and daughter, Battle Creek.
Miss Kenneth, Ironwood.
A. L. Klopf and wife, Saginaw.
William P. Laffin and wife, Chicago.
I. Lammers and wife, Grand Rapids.
D. Lamoreaux and wife, Grand Rapids.
Arthur Lange and wife, Saginaw.
William Lange, wife and three children, Saginaw.
W. R. Lawson, Chicago.
W. Leonard and wife, Saginaw.
George Lowder, wife and daughter, Marshall.
George Lubahn, wife and daughter, Jackson.
William Lusk and wife, Battle Creek.
A. B. Lewless and wife, Saginaw.
D. M. Marshall and wife, Detroit.
T. Marshall and wife, Detroit.
H. B. Martin, wife and son.
R. Mavelle and wife, Saginaw.
William U. Metzger, wife and daughter, Kalamazoo.
A. Meulenberg and wife, Kalamazoo.
John Meisenberg, Kalamazoo.
Ira Miller, Kalamazoo.
Charles Nason, wife and son, Grand Rapids.
J. B. Naylor and wife, Grand Rapids.
A. J. Nydam and wife, Grand Rapids.
Louis Oehringh and wife, Detroit.
Frank Oole and wife, Grand Rapids.
Francis Pasman, Kalamazoo.
C. J. Pearson, Battle Creek.
N. L. Pierson, Jr., Detroit.
E. A. Phillips, wife and daughter, Durand.
Harry Rhodes and wife, Grand Rapids.
Fred Reule, Battle Creek.
William Roberts, wife and daughter, Saginaw.
J. Van Rossum, wife and daughter, Grand Rapids.
Fred Schoolcraft and wife, Otsego.
Edwin A. Scott, New York City.
L. Shouldice and wife, Ironwood.
Mrs. Shouldice, Ironwood.
J. A. Shouldice and wife, Battle Creek.
F. F. Smith and wife, Kalamazoo.
H. M. Snow and wife, Kalamazoo.
J. Sikkenga and wife and two children, Kalamazoo.
I. Sikkenga, wife and two children, Kalamazoo.
J. A. Stearns, Detroit.
J. Stewart and wife, Detroit.
R. B. Strong and wife, Coldwater.
Fred Striewski, wife and three children, Detroit.
J. A. Temple and wife, Kalamazoo.
Earl Updike and wife, Chelsea.
George Vander Molen and wife, Grand Rapids.
J. Vander Waals and wife, Grand Rapids.
A. W. Wagner, wife and two children, Jackson.
William Waldron, wife and daughter, Lansing.
E. H. Ward, wife and daughter, Lansing.
T. A. Warner, Chicago.
C. S. Weatherly, Grand Rapids.
R. Weiss and wife, Saginaw.
Charles Weissner and wife, Kalamazoo.
Miss Weissner, Kalamazoo.
Mr. Whipple, wife and son, Lansing.
Howard Wilkinson and wife, Hartford.
John Wilson and wife, Jackson.

Now let's all get together and save our "pennies" so that we can be together at the 1924 outing, which is going to be even better than this year's. Better write Frank Ederle, 1121 Franklin Street S. E., Grand Rapids, Michigan, for full information as to the plans and the "Savings" idea.

Harry Hussie Sends Thanks to Friends in St. Louis Conventions for Telegrams and Flowers.

We are very glad to publish the following letter from John H. Hussie, who was prevented by a very serious illness from attending the St. Louis convention:

To American Artisan:

As it is impossible for me to write each member, will you please allow me, through your journal, to thank the National Association of Sheet Metal Contractors and the Western Warm Air Furnace & Supply Association for the cheering telegrams and the beautiful flowers sent me during the time of their convention, in St. Louis, last week.

Some men wonder whether it pays to belong to trade associations. Well, it does. I never realized how many wonderful friends I had until my present illness brought them to me with words of cheer and offers of assistance.

Yours very truly,

John H. Hussie.

Omaha, Nebraska, July 2, 1923.

Manufacturers of Hollow Metal Windows Meet in St. Louis.

The following report has been received from Paul L. Biersach who served as temporary secretary at the meeting of the National Association of Manufacturers of Approved Hollow Metal Window Frames and Sash which was held in St. Louis on June 27th at Hotel Statler:

In accordance with a call for the annual meeting sent out by Harry C. Knisely, president and treasurer of the National Association of Approved Hollow Metal Window Frames and Sash, for the purpose of hearing reports, discussing such matters which are for the benefit of and for the future welfare of the organization, this body met June 27th at the Hotel Statler, St. Louis, with President Knisely in the chair. The following members were notified as to the time and place of the meeting:

H. C. Knisely Company.
Biersach & Niedermeyer Company.
Thomas E. Lee.
J. C. McFarland Company.
Rasner & Dinger Company.
E. A. Rysdon & Company.
The Sykes Company.
Henry Weise Manufacturing Company.
J. F. Wagner & Sons.
American Sheet Metal Works.
Consolidated Sheet Metal Works.
Leonard Sheet Metal Works.
Noeschl-Edwards Corrugating Company.
The Riester & Thesmacher Company.
Louis Rysdon & Company.
E. Van Noorden & Company.
M. F. Westergren.
Louis Biegler Company.
Hermann & Grace.
James A. Miller & Brother.
Perkinson & Brown.
J. F. Ruth.
F. O. Schoedinger.
Voightmann & Company.
Willis Manufacturing Company.

The minutes of the previous meeting held at Indianapolis, Indiana, a year ago were read and upon motion made by Paul L. Biersach and

seconded by Rudolph Biersach, accepted and approved as read and this motion was carried unanimously.

Committee on Construction.

This committee submitted an exhausted report as to what they have done and accomplished during the past year, attaching exhibits of laboratory tests, correspondence, etc., in fact, so voluminous that it is impossible to embody the same in the minutes of this meeting, but said data can be had for inspection at any time from the secretary. It is needless to assert that those present appreciated the aggressive work of this committee and appreciation and thanks were voiced by the members present.

President H. C. Knisely elaborated extensively upon the work accomplished by the organization since its inception and suggested and recommended that it continue with the same zeal and effort in the future as in the past.

It was brought out during the discussion that the labeled window industry ran into the millions.

The following were elected upon motion by Mr. Markle, seconded by Mr. Rath, instructing the secretary to cast the vote for those nominated, said motion being unanimously carried, thus:

President, John Bogenberger, Milwaukee.

Secretary-Treasurer, Harry C. Knisely, Chicago.

Committee on Construction—John Bogenberger, Milwaukee; George Thesmacher, Cleveland; George B. Detterman, Louisville, and Harry C. Knisely, Chicago.

Views were expressed that it is inopportune to hold our annual meeting at the same time as that held by the National Association of Sheet Metal Contractors, as conflicting meetings make it sometimes impossible to meet the requirements of both organizations; members of this organization belonging and being identified with both bodies, and it was therefore decided to permit the officers of our Association to call the next annual meeting at such a time and place as will be more favorable and desirable.

Ohio Sheet Metal Men Will Meet at Hotel Gibson, Cincinnati, July 17 to 19.

Singularly amusing but no less clever is the program announcing the Ninth Annual Convention of the Ohio Sheet Metal Contractors' Association, to be held at the Gibson Hotel, Cincinnati, Ohio, July 17 to 19, 1923.

Page 1 of the program shows a large bill-board set up in a field with a sheet metal contractor perusing it. The board is headed with the words, "Plans and Specifications for the Ninth Annual Convention," etc.

One in Every Tin Shop

Have you one of those irritating puzzles in your tin shop? One of those tiny thorns in the "finger" of your business which festers up and interrupts the smooth rhythm of an otherwise well-oiled machine?

Write to American Artisan concerning your troubles and have those bothersome difficulties cleared up.

Don't work behind a smoke screen!

Let us help you!

Page 2 shows all manner of sheet metal men en route to the convention in various and sundry means of conveyance.

Page 3 portrays the financial committee as a group of thugs putting up a job, while the entertainment committee has set out the family album for the visitors' perusal.

Under the heading, "Things to See in Cincinnati," the cartoonist has very cleverly drawn a guest in the act of inspecting a giraffe. The expression on the face of the guest and the giraffe is one of interrogation and amazement.

In order not to forget the Salesman's Auxiliary, the cartoonist has very facetiously, but perhaps none the less correctly, drawn a man rushing breathlessly into the room, shouting at the same time to "Hide your valuables and save the women and children first! The jobbers and Salesman's Auxiliary are coming!"

Headquarters for the convention will be at the Gibson Hotel, whose rates are: Single room, $2.50 up; double room, $4.00 up.

William Miller, Dayton, Ohio, is Secretary.

Highly Interesting and Descriptive Kant-Break Ladder Pamphlet Issued by Makers.

Kant-Break Ladders, Incorporated, Ninth and Monroe Streets, St. Louis, Missouri, manufacturers of the Kant-Break Ladders, have issued an explanatory pamphlet dealing with their Kant-Break ladder. This little pamphlet is very well designed in blue and red. It contains not only a complete description of the ladder, but numerous testimonials from representative firms in and out of the trade.

For further details write to Kant-Break Ladders, Incorporated, Ninth and Monroe Streets, St. Louis, Missouri.

Notes and Queries

Bangor Certificate Slate.

From Oleson Hardware Company, Elkhorn, Wisconsin.

Kindly advise me who manufactures Bangor certificate slate 8 x 18 inches in size.

Ans.—Vendor Slate Company, 626 Marquette Building, Chicago, Illinois.

Burner Section for Pennsylvania Gas Furnace.

From Otto Becker, London, Ohio.

Where can I get a burner section for a No. 20 Pennsylvania gas furnace?

Ans.—Pennsylvania Furnace and Stove Company, Warren, Pennsylvania.

Tinned Metallic Rivets.

From Adkins Roofing Company, Wheeling, West Virginia.

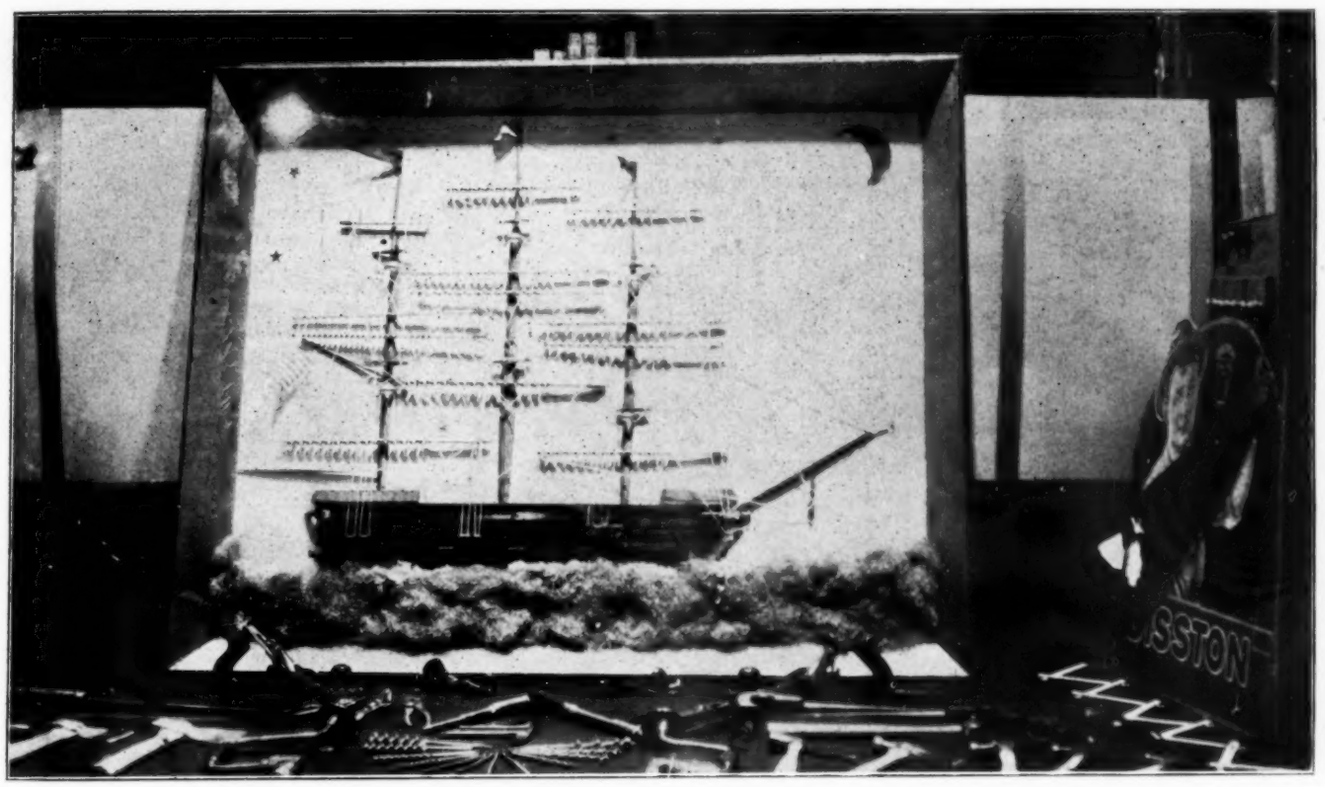
Where can I secure Tinned Metallic Rivets with round and roll head in lots of five to twenty-five pounds?

Ans. — Tinned Metallic Rivets with round and roll heads are manufactured by the Interstate Iron and Steel Company, 104 South Michigan Avenue, Chicago, Illinois. They can be secured, in lots as stated above, at wholesale hardware houses.

Marshall Constructs Old-Style Sailing Vessel Entirely of Tools, Making "Sea" of Steel Wool and Cotton Waste.

Gross & Jacobs Company, Stevens Point, Wisconsin, Find Unique Way of Making Interesting Tool Window Display.

"YO Ho! Ho! and a bottle of r—," no 2.75 per cent. Any one who has ever attempted to figure out the various and sundry names and nick-names given to the parts of a ship will know what a difficult task it is. To construct a ship of hardware riding at anchor on the great blue sea is a job which few are willing to tackle. But J. M. Marshall is noted for his ability to tackle jobs which seem all but impossible at first blush. He made the accompanying tool window display for the Gross & Jacobs Company, Stevens Point, Wisconsin.



This Full Rigged Ship Was Made Completely from Tools and Hardware Articles by J. M. Marshall for the Gross & Jacobs Company, Stevens Point, Wisconsin.

Mr. Marshall's description is as follows:

"A full rigged sailing ship made of articles of hardware. For window and part of background, blue crepe paper; for frame, 6 inch flooring; for field of frame, wall board. Hull and freeboard, assorted sizes hack saw blades. Stem and stern, Dandy rules No. 10. Sheerstrake, No. 3 rule. Railing, No. 782 carpenter's pencils. Bowsprit, ½ inch cold chisel. Jib-boom, 14 inch bastard file. Forecastle, No. 881 carpenter's pencils. Poop-deck and cabin, No. 72 boxwood rule. Water stay, No. 7 screw driver bit. Standing, running riggins and stays, chalk and mason lines. Anchor chain, key chain. Buoy, No. 12 plumb bob. Fore mast, 10 inch half round wood rasp. Fore top mast, 10 inch half round wood rasp. Fore top gallant mast, 12 inch round bastard file. Fore yard, No. 36 Snell's car bit. Fore lower top sail yard, No. 36 Snell's car bit. Fore upper top sail yard, No. 36 Snell's car bit. Fore top gallant yard, No. 126 carpenter's nut auger. Main mast, 12 inch half round smooth file. Main top mast, 12 inch half round smooth file. Main top gallant mast, 12 inch round bastard file. Main yard, No. 51 Snell's ship auger car bits. Main lower top sail yard, No. 51 Snell's ship auger car bits. Main upper top sail yard, No. 51 Snell's ship auger car bits. Main top gallant yard, No. 126 carpenter's nut auger. Mizzen mast, 8 inch half round wood rasp. Mizzen top mast, 8 inch half round wood rasp. Mizzen top gallant mast, 10 inch round bastard file. Mizzen yard, No. 51 Snell's ship auger car bits. Mizzen lower top sail yard, No. 126 carpenter's nut auger. Mizzen upper top sail yard, No. 126 carpenter's nut auger. Mizzen top gallant yard, 8 inch round bastard files. Spanker boom, 10 inch round bas-

tard files. Gaff, 8 inch round bastard files. Rudder, trolling bait spoon. Ring buoys or life preservers, 1¼ inch white martingale rings. Flag, silk. Pennant, red and blue cloth. All the sails, No. 12 sash cord. Mast heads, pipe straps. Cross trees, screw driver bits and nail sets. Mast tops, tube rod tips. The sea, steel wool and waste."

Extreme Fluctuation in Production and Price Is the One Stupendous Obstruction to Orderly Conduct of Business.

Alvein E. Dodd Tells Hardware Men of National Tendencies in Hardware Distribution at Richmond Congress.

THE stupendous obstruction to the orderly conduct of business in this era is the extreme of fluctuation in production and price. No one benefits by our peaks and everyone suffers while traversing the valleys, except perhaps a few speculators who profit almost if not wholly, accidentally. Money which appears to have been gained during the extremes of high prices usually must be spent in preserving a business through the processes of recovery from the sudden and certain price declines.

Business Has No Conception of a Safe Level.

Business today has no conception apparently of a reasonable and safe level, but grasps every opportunity to produce more and to sell more. "After me the deluge" was an aphorism of Louis XV which has been used and misused until it is trite and it is the team-mate of "Let the devil take the hindmost."

So far as I can recollect I have never seen a budget which did not contemplate an enlargement of the sales based upon a study of the business history and almost blind to the question as to whether the previous volume was satisfactory. If we could only fix in our minds the idea that more business carried to its ultimate point means disaster just as less business carried to its ultimate point means failure, we should find a safe road to that happy haven known as "good business." The push, struggle and crowding resulting from the unrestrained effort for more business is the source of many if not most difficulties which you and other business men face periodically. *More advertising* demands more styles to advertise and *more styles* demand more advertising "Creating demand" is a different matter than supplying necessities and a large proportion of costs in distribution are the direct result of creating demand for novelties which fulfill no economic need.

Every new design created by a manufacturer inspires the creation of a competing design by every other manufacturer and we have as a result a mounting pyramid of competition and of expense through all the steps of production and distribution.

I can draw for you a picture of distribution which is entirely contrary to anything which exists and which will not meet with your approval, but it has the virtue of being logical.

Let us assume that there are retail establishments located at convenient distances apart and in locations convenient to the needs both of the stationary and of the moving masses of the population; that is, of those who remain at home and of those who go to their occupations daily over greater or less distances. These retail establishments are of different classes, in order to dispense economically the products of different trade, such as hardware or clothing. There is no solicitation of customers; there are few, if any, styles which depend for their profitable merchandising upon the "creation of demand" and most of the selling done by sample. Most of the sales are delivered at the houses of the customers by a cooperative or general delivery system. Since there is no motive for substitution most of the purchases may be accomplished by telephone. The rate of production is comparatively level because it is possible to arrive at a close approximation of the average demand for different commodities and with the supplies known and the demand known it does human nature less than justice to suppose that there would be exaggerated conditions of over-production and under-production,—the alternating chills and fever of business today.

Distribution cannot, under the present scheme of things reduce its costs in the same sense that manufacturers can reduce the cost of production. Manufacturers may substitute power-driven machines for hand labor. This is the problem of the distributor.

Buyer Assumes All Risk, But He Also Holds Whip Hand.

A careful consideration of your difficulties and the conditions surrounding the retailing of hardware shows clearly that you are not burdened more than any other retail group at this time. Herein you may find some reason for congratulation; and also, perhaps a reason for some mystification. First, because misery loves company but second, there should be no mysterious conditions beyond the power to eradicate of a great body of citizens like yourselves; and there would be no such conditions if you could be brought to act together as a group on the principle of 'One for all and all for one."

More and more, I am forced to the conclusion that while the buyer assumes all risk, also he holds the whip hand through his power of choice and his power of refusal to buy unless his judgment dictates the act, for example, it is almost unnecessary to state that you can solve the tremendous problems of simplification by united action whenever you wish to do so; and simplification comes pretty nearly being the secret upon which increased turnover is based. There is scarcely a department in hardware from carpet tacks to garden tools where a multiplication of styles and varieties does not embarrass you in selecting what to buy. I am not speaking of new devices for sprinkling lawns or improvements in door checks, although even in such articles some of the new offerings are of questionable value. I refer to sizes and shapes which involve no new principle of construction or use.

You have accomplished great advances in the study of simplification and already you have succeeded in eliminating many articles which hitherto have cluttered your shelves; but the value of your work so far is suggestive, principally. It shows what you can do when you try and a fair prospect is open to you for persistent effort in this direction which as I said before paves the road to increased turnover on which all sound modern merchandising is based.

It is Difficult to Distinguish Between Good and Bad Trade Customs.

Trade customs are so powerful that it is difficult often to discriminate between the good and the bad, because of their historic character. Probably there has not been invented during the last 100 years a single new device or trick for completing a sale. Selling goods on trial and selling goods on credit probably are as old as distribution, yet they are almost indefensible. A merchant who cannot collect payment when the goods are handed to the purchaser is lacking in strength if he wishes really to conduct a cash business. As devices for meeting competition they are worthless because if all competitors adopt them the result is negative in any advantage which may be secured and the public is taught an injurious habit,—injurious both to the merchant and to his customer, since both of these practices lead inevitably to higher and higher prices to cover the inescapable losses.

Please understand clearly that I am not discussing here the right or wrong, —the advisability or the inadvisability of a strictly credit business.

I am informed that you have cause for complaint that certain wholesalers make a practice of selling merchandise to you and then selling for personal use to your neighbors. This is a somewhat unusual situation and is a practice which will be found rarely in other lines of trade. It is a violation of trade ethics so clear and unmistakable that I should expect you to destroy it root and branch with little delay and with comparatively little difficulty.

You cannot dictate to whom an unethical wholesaler shall or shall not sell; but there is no law which requires you to buy anything on earth for any reason whatever. Hence, if a wholesaler is able to sell more articles of a certain kind in a certain town than the town can consume within the period constituting a good or reasonable turnover, you are responsible and not the whole-

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Important points of the address on "National Tendencies in Hardware Distribution," delivered by Alvein E. Dodd, Manager Domestic Distribution Department, Chamber of Commerce of the United States, Washington, D. C., before the members of the National Retail Hardware Association attending their Annual Congress in the Jefferson hotel, Richmond, Virginia, June 19 to 22, 1923.

saler since he can only offer while you alone can complete the sale.

Cost of Doing Business.

A recent cost of doing business survey in retail hardware establishments gives a common figure of 21.56 per cent on the retail price. This is about an average of the cost of doing business in all retail establishments in all lines of trade so far as we can judge. Chain groceries are said to reach a figure less than 15 per cent while department stores exceed 25 per cent. You, therefore, seem to be in a safe position which indicates also that your costs can be reduced materially by a more careful study of simplification and turnover. This is another way of getting a study of your stock in the interest of close buying. Your average stock turn of 2.28 per cent is so low that it gives even further encouragement to believe that a careful study of your business will repay the effort many-fold.

Your immediate problem as I see it is to determine the safe level of buying, adhering as closely to the purchase of articles for which a known market exists and without counting upon the creation of demand in any large degree. Anticipated demand is a first cousin to speculation; speculation may be defined as uncertainty; and uncertainty is the bane of business.

Murray Tells Hardware Men Cost of Doing Business Must Be Restrained and Governed.

Says at Richmond National Hardware Congress, Office Records Should Not Be Too Complicated.

MR. WEBSTER defines control governing, regulating and restraining. Before we can restrain, govern and regulate our business, it is essential to know what we are going to restrain, what we are going to govern, and what we are going to regulate. It is necessary to know: What we have in real estate, merchandise and cash; how much is due us; how much we owe others; how much business we are doing; how much it costs us to do it.

After these facts are established, perhaps the first restraining I should suggest would be restraint of credit terms so that both the amount due us and the amount we owe others could be reduced; and the amount of merchandise and cash we own increased.

The cost of doing business needs to be restrained, governed, and regulated carefully, for if our costs of operation increase without a corresponding increase in profitable business, our profits vanish and possibly a loss ensues. On the other hand if we can so organize our advertising and other selling factors as to increase our profitable volume with a small proportional increase in expense, our profits increase rapidly. It is then easy to further increase our volume for the reason that we can keep our retail prices at a lower point as the increased volume has automatically reduced the cost of operation.

Largest Difficulty is Control of Business

I am a fanatic on the angle of control, for when we are able to restrain, govern, and regulate this part of our business to my mind the largest difficulty is solved. In our section of Pennsylvania a hardware store operating on a 25 per cent overhead is not going to have any real profit and hardly a fair salary for the owner, but if increased sales can be secured with a small additional overhead the profit will appear and as it appears will if properly controlled continue to reduce the overhead by increasing the volume.

This increased volume can be secured by so arranging our lines of merchandise that there will be no dull seasons. Twelve months of activity are necessary to increase volume and decrease cost of operation. I remember the time when in our own business we had four months good business, four months of poor business, and four months of no business. Our records do not show our cost of doing business at that time, but we do know that the cost of operation was too high for profit or even good salaries. Now we have twelve months of business, and the old four months in which we had no business are now called the busy months. Add new lines of anything that can be sold. It's necessary to sell continuously to make money.

Advertise all the time and in every way; catalogs, sales letters, canvassers, newspaper advertising are all good, but sufficient time and thought must be given to advertising so that we will know it gives the desired result. Here again restraint and regulation are needed. We spend 1½ per cent of our gross sales on advertising. At one time we spent a much larger percentage, but our increased volume has reduced the cost.

Increase Volume by Getting All Business in Sight

Getting all the business in sight is the best way of increasing the volume and decreasing the cost of doing business. We get all we can at a good profit, then all we can at a fair profit, and then when we can't get either of these varieties we fill in with business at a gross profit as low as ten per cent and often this is good business. We furnish leather belting to the factories, in our city for shipment from the mill at 10 per cent profit, we also sell the blacksmiths, who pay their bills promptly, their supplies on the same basis; in fact, we are glad to have all the business we can get at 10 per cent profit on a cash basis and for direct to customer shipment. We believe it is possible to make money by this method and it helps volume and decreases overhead. Increased volumes with the same or a little more stock is the answer to most of our troubles.

In controlling costs of operation I do not believe in reducing salaries or wages, on the contrary believe in increasing them. But in making everyone, particularly the bosses, earn more either with their brain or muscle. Some of us think we are working too hard, but generally if we study our job we find that it is not so much hard work as misapplication and bad management that tires us. Only too often we owners or managers are fussing around at work, which someone else working for far less salary than we draw, could do better. The head of a business should have time to study and control his business, and if he does not do this the business needs a new manager.

Office Records Should Not Be Too Complicated.

Systematic office records are essential for the control of any business and should be kept so that the executive can, in a few moments, visualize the whole proposition. Expansion without system spells failure. I am not an advocate of any complicated or intricate system which keeps everybody in the store so busy with records that they do not have time to sell goods, but believe in a simple method that gives the desired information with a minimum of red tape. Too much system is almost as bad as not enough. A good working system is always subservient to the demands of the business.

Excerpts of the address on Business Control and Its Application delivered by Robert J. Murray before the members of the National Retail Hardware Association which held its annual congress in the Hotel Jefferson, Richmond, Virginia, June 19 to 22, 1923.

Coming Conventions

Ohio Sheet Metal Contractors' Association, Hotel Gibson, Cincinnati, Ohio, July 17, 18 and 19, 1923. William Miller, Secretary, Dayton, Ohio.

Sheet Metal Contractors' Association of Pennsylvania, Hotel Allen, Allentown, Pennsylvania, July 26 and 27, 1923. W. F. Angermyer, Secretary, 714 Homewood Avenue, Pittsburgh, Pennsylvania.

The West Virginia Retail Hardware Association, Convention and Exhibit, Huntington, West Virginia, January 15 to 18, 1924. James B. Carson, Secretary-Treasurer, 1001 Schwind Building, Dayton, Ohio.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, February 12, 13, 14, 1924. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

The Ohio Hardware Association, Convention and Exhibit, Cincinnati, Ohio, February 19 to 22, 1924. James B. Carson, Secretary-Treasurer, 1001 Schwind Building, Dayton, Ohio.

Retail Hardware Doings

Illinois.

John Roney, former salesman for the Morehouse and Wells Company, Decatur, left that concern to go to Dalton City and open a hardware business of his own.

Charles and James Callow, two well-known residents of the Media neighborhood, Monmouth, will in the very near future open up a hardware store in Roseville in the rooms formerly occupied by the H. S. Becker Hardware Company.

Pennsylvania.

The firm of Speizer and Eisenberg has dissolved partnership, Arthur and Morris Speizer retiring. The business will be conducted by Adolph Eisenberg.

In Writing Your Advertisements Remember That the Head Lines and Illustrations Must Be Depended Upon to Tell the Story in the Brief Time the Readers' Eyes Rest upon Them.

This Being the Case, These Important Members of the Ad Should Be So Correlated with Each Other and with the Body as to Get Attention, Create Interest, Instil a Desire and Tell Where and How the Article Can Be Secured.

IT is very disappointing to view the number of advertisements being run, using good money and valuable time, upon which apparently little or no thought has been expended. It indicates the willingness and desire to push the business in the right direction and by the proper means, but through lack of proper advice the advertiser is not receiving the entire amount of return possible or in proportion to the money expenditure made.

JUST CONSIDER
The PARAMOUNT Malleable Gas-Coal Range from every angle and you will see why women already using them are entirely satisfied. You will be proud to have one of these truly practical Combinations in your kitchen.
Investigate now and learn the attractive price at which you can buy a
Paramount
MALLEABLE
PASTRY
BROILER
VAN'S HARDWARE
408-410 Dousman St.
Telephone 848

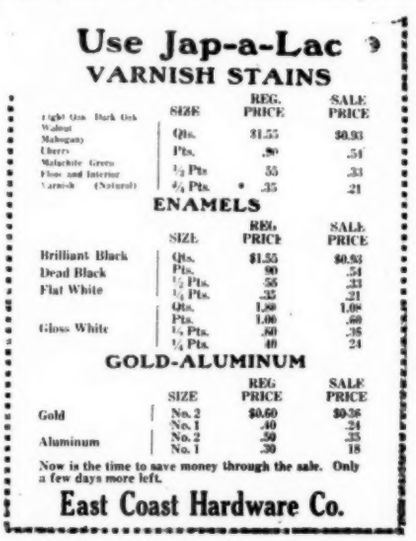
The accompanying advertisement is a reproduction of the copy of Van's Hardware which ran in the Green Bay (Wisconsin) *Gazette*.

This advertisement could have been made much more attractive and productive of results had the copy writer used the space devoted to reading matter to enlighten the reader regarding some of the points to be considered; he could have helped the reader to consider those points; he could have enlarged upon the performance and the appearance of the stove when placed in its proper position in the kitchen. He should have made some specific offer that would have been a drawing card to get people, especially the women, into the store where the stove could be seen and where the salesman would have had an opportunity to discuss the finer points of the range and to allow that all-important personal equation full sway.

The advertisement is free from typographical or grammatical errors, but with a little closer attention it could have been made much more colorful and less on the order of the prosaic cut-and-dried type. Let the advertisement as well as your window displays function the way they were intended to do; let them be a true representative of your own character; give them personality and make them look as though they were made by an individual to serve the purposes of that individual, never losing sight of the fact that you want to sell stoves, and you will be delightfully surprised at results obtained.

* * *

The East Coast Hardware Company advertised a sale of varnish stains, enamels and gold-aluminum. We like this ad because of the simple, plain way it stresses the size,



regular price and sale price of the articles offered. Substantial values are given, it will be noticed.

Both ads have good selling points, and we venture both produced a nice business.

* * *

Somebody will find a better way if you don't.

Uncertainty Prevails as Business Enters Midyear; Excessive Production Is Being Curtailed; Price Recessions Continue.

Shortage in Cars Disappears, But Freight Traffic Continues Large—Business in Non-Ferrous Metals Continues Light, While Prices Continue to Fall.

THE further declines which have occurred in the stock market this week have been a disturbing influence, for business men both here and abroad are looking to Wall Street to furnish a clue as to the future prospects of commerce and industry.

On the other hand, the ability of manufacturers to maintain operations at close to the high levels reached a month or so ago is a reassuring evidence that consumers' purchases during the first quarter of the year were against actual requirements, and that neither in the case of raw or finished goods has there been any large accumulation of surplus stocks.

The heavy consumption places manufacturers in the position of having to place new orders for raw material for the autumn trade, for as it looks at present, the outstanding contracts will not carry them beyond the summer months.

Montgomery Ward & Company's sales for June were $11,612,004, the highest of any June in the Company's history.

Sales for this firm for June, 1922, were $8,655,443 and for June, 1921, $6,806,143, making an increase of 70.61 per cent over June, 1921, and 34.16 per cent over June, 1922.

Sales for the half year just ended were $64,437,020, the highest for any similar period in the history of the company.

Sales for the current half year were $5,176,865 in excess of the same period in 1920, the previous high mark.

Sears, Roebuck & Company's sales for June were $13,333,349, against $10,910,108 a year ago, an increase of 22.21 per cent.

For six months sales amounted to $106,777,257 against $82,503,225, increase of 29.42 per cent, which proves that a tremendous buying movement among farmers and people outside of the great metropolitan districts has been under way during the first six months of 1923.

The buying of non-ferrous metals is still light and prices are falling in every instance, except on aluminum and antimony. Good shipments are being maintained.

Copper.

Demand for copper from home consumers is without improvement; in fact, some melters are asking delay in shipment against contracts as a result of requests for the postponement of shipments of finished products for several weeks.

Other producers than those offering electrolytic at 14.75 cents delivered last week, are now willing to accept the latter price even for small lots, but it is difficult to make sales even at further concessions. The observation of Independence Day on Wednesday had a tendency to emphasize the present dullness in trade.

Last week total exports from New York were 2,383 tons, of which 1,758 tons went to England, 395 tons to Germany, 200 tons to Spain and 30 tons to France. Of the exports last month, probably 15,000,000 pounds were finished products.

Tin.

Declines in London caused another sharp reaction in the domestic tin market.

In the New York market the price of Straits tin dropped to 37.50 cents for prompt and future deliveries, the premium on prompts having entirely vanished. On the New York Metal Exchange 100 tons for various forward positions were sold at 37.45 cents and a still larger amount has been sold to consumers for July, August and September deliveries at 37.50 cents.

The fact that the price has dropped to the lowest level reached this year and ¼ cent below the top price in March has attracted a certain amount of consuming buying.

It is to be noted, however, that the consumers continue to pursue a cautious attitude and none of them show any disposition to make large purchases. They are willing to buy some tin, but in most instances are content to take only one lot.

Lead.

The lead market is holding firm at 6.85 cents, New York, and 6.50 cents, St. Louis.

The demand from consumers over and above their requirements covered by contract deliveries is small, and a dull condition prevails, so that some outside lots of June desilverized lead in the west sold late last week were forced out at a discount below the current market.

Prompt St. Louis lead is quoted at 6.45 to 6.55 cents; July, 6.45 to 6.55 cents; August, 6.40 to 6.50 cents.

Zinc.

The St. Louis zinc market is dull and lifeless, while the price for this district holds at 5.70 cents. The volume of business has been extremely light. The pressure to sell is less pronounced.

The quotations for East St. Louis are as follows: Prompt, 5.75 to 5.80 cents; July, 5.75 to 5.80 cents; August, 5.80 to 5.85 cents.

Prime Western spot zinc is quoted at St. Louis 5.70 cents.

Solder.

Chicago warehouse prices on solder are as follows: Warranted 50-50, $25.50; Commercial, 45-55, $24.75, and Plumbers', $23.50.

Bolts and Nuts.

Third quarter bolt contracts at Chicago are practically all closed and

producers have average order books against which to work. Some spot buying is being done also, which assists in keeping business active. Most consumers are buying about their usual requirements and are conservative.

Tin Plate.

Specifications on tin plate contracts continue to assume large proportions, most can makers being anxious to receive all of the material due them as soon as possible.

New forward buying has been limited, due to the fact practically all consumers are protected on tonnage. The Texas Company, however, is understood to have placed recently with an independent West Virginia tin plate producer an order for 75,000 base boxes for oil can purposes.

For the most part, however, both customers and shippers alike are concerned about the discharge of present mill obligations.

At the moment, the major portion of attention is being paid to vegetable containers.

Fruit containers will follow shortly and other general-line cans at all times furnish a sizable outlet for tin plate tonnage.

The general price is unchanged at $5.50 per base box, 100 pounds, Pittsburgh, although in one or two directions independents claim still to be receiving $6 on certain lots.

Old Metals.

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, $21.00 to $21.50; old iron axles, $27.00 to $27.50; steel springs, $22.00 to $22.50; No. 1 wrought iron, $15.50 to $16.00; No. 1 cast, $18.50 to $19.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pounds: Light copper, 9½ cents; light brass, 5 cents; lead, 4¼ cents; zinc, 3½ cents; and cast aluminum, 15 cents.

Sheets.

Little change in the sheet market is apparent. Makers report that specifications are being issued in sufficient volume to maintain full rolling schedules.

Production, however, during the latter part of June was curtailed considerably on account of the hot weather and it was necessary in some cases to carry over tonnage into this quarter.

While reports of spots in the black market are heard they lack foundation. On inquiries for black coming into this district the price of 3.85 cents Pittsburgh, is being quoted. The volume of black sheet business pending is not large and frequently involves from a few sheets to bundled lots. The inquiry for 1,800 tons of black barrel stock put out about ten days ago has been withdrawn. According to the latest advice the order for the drums was placed with a different fabricator who will issue specifications against its sheet contract made with a mill outside this district. Black sheets of tin mill sizes are quoted here from 3.85 cents to 4.00 cents, Pittsburgh.

Galvanized continues quotable at 5.00 cents, base Pittsburgh, by the few makers here now operating galvanized units. The railroads are becoming more strict in the enforcement of the standard method of bracing sheets in box cars and have returned a large number of carriers to certain mills which have been bracing shipments by methods other than required.

High-grade sheets are priced at 5.35 cents, Pittsburgh, for the third quarter and a good volume of business has been entered against this figure.

Halting Condition Still Exists in Pig Iron Market; Prices Are Lower in All Territories.

Chicago Price Drops $1 to $29, with No Buying—Large Producers at Birmingham Maintain $27—Valley Iron Drops $1.50.

PRODUCTION and shipments in the iron and steel industry are still heavy with the market a bit sluggish, but free from any marks of real weakness, according to the midweek report of the Iron Trade Review. A halting condition of new business still exists, and the question of just how long this can continue without developing a few soft spots is an unsettled question.

The report which shows a reduction in average prices says:

"Dropping pig iron prices continue to depress the composite of fourteen leading iron and steel products. This week the composite registers $45.72, against $46.16 last week, an average of $46.46 in June and a recent high mark of $47.70. The amazing record of coke pig iron production for the last four months is holding up well considering the unfavorable season for blast furnace operations. June shows a daily average of 122,450 tons, only measurably below the high mark of 124,790 tons in May. The June total was 3,673,503 tons, as against 3,868,486 tons in May. Furnaces in blast also increased, 324 being active the last day of the month, against 322 the corresponding date in May. Total production of pig iron for the first half was 20,834,136 tons.

"Iron and steel exports are steadily rising, the 195,535 tons in May being the highest since June, 1922. Imports in May were about stationary at 75,840 tons.

"New and higher extras on hot rolled steel bars put out this week by leading producers are important in the extent of the changes, which are the most comprehensive in a number of years, and in the amount of the advances, which range from $2 to $10 a ton. Competition of steel makers, particularly in steel making metal, is forcing a further fall of pig iron prices, and this influence has extended over a widening area. A 3,000 ton sale of basic went this week at $25.50 valley, a drop of $1.50."

Inland Copper Alloy Sheets

INLAND STEEL COMPANY
38 South Dearborn St., Chicago

Works:
Indiana Harbor, Ind.
Chicago Heights, ILL.

Branch Offices
Milwaukee St. Louis
St. Paul

Steel Ceilings Side Walls and Cornices

Only first quality material used
Many neat designs of character.

Write today for our complete catalog giving descriptions and prices.

THE W. J. BURTON CO.

Junction Ave. and Federal St. and 436 Penobscot Bldg. Detroit, Michigan

EARLE'S VENTILATOR

IMPROVED REVOLVING

Write today for complete catalog

It runs in a self-lubricating bearing that is not affected by heat or cold. It is noiseless and produces an upward current of air. No down draft. It will satisfy and give you a good profit.

BERGER BROS. CO.
229 to 237 ARCH STREET
WAREROOMS AND FACTORY: 100 TO 114 BREAD STREET
PHILADELPHIA, PA.

Lupton

Elbows, Conductor Pipe, Eave Trough, Etc.

The superiority of Lupton's Products has been established on the solid basis of quality.

Lupton's Elbows are machine made, in one piece; hence they never vary in size, girth or shape. A replacement is as easy to do as a new job.

The conductor pipe is made full girth, with an ample seam that is tightly locked and sets flat on the back of the pipe.

There's no obstruction in the bead of Lupton's Eave Trough: the connection is easily made.

The use of Lupton's Products saves time and labor and produces a better job.

Made from Armco Iron, Toncan Metal, Horse Head Zinc, galvanized steel and copper.

Order from your Jobber or write for our new catalogue and list prices.

David Lupton's Sons Company
Allegheny Avenue and Tulip Street
Philadelphia

Lupton

"Lupton Elbows FIT"

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON.

Chicago Foundry	31 00
Southern Fdy. No. 2	32 00
Lake Sup. Charcoal	36 65
Malleable	31 00

FIRST QUALITY BRIGHT TIN PLATES.

		Per Box
IC	14x20 112 sheets	$12 45
IX	14x20	14 05
IXX	14x20 56 sheets	17 57
IXXX	14x20	18 12
IXXXX	14x20	18 65
IC	20x28 112 sheets	27 50
IX	20x28	29 85
IXX	20x28 56 sheets	16 15
IXXX	20x28	17 20
IXXXX	20x28	18 25

TERNE PLATES.

		Per Box
IC	20x28, 40-lb. 112 sheets	$25 60
IX	20x28, 40-lb. " "	28 50
IC	20x28, 30-lb. " "	21 80
IX	20x28, 30-lb. " "	24 70
IC	20x28, 25-lb. " "	20 80
IX	20x28, 25-lb. " "	23 70
IC	20x28, 20-lb. " "	18 30
IV	20x28, 20-lb. " "	21 15
IC	20x28, 15-lb. " "	17 05
IC	20x28, 12-lb. " "	15 75
IC	20x28, 8-lb. " "	14 05

COKE PLATES.

Cokes, 80 lbs., base, 20x28.	$14 05
Cokes, 90 lbs., base, 20x28.	14 30
Cokes, 100 lbs., base, 20x28.	14 65
Cokes, 107 lbs., base, IC 20x28	15 10
Cokes, 135 lbs. base, IX 20x28	17 15
Cokes, 155 lbs. base, 56 sheets	9 30
Cokes, 175 lbs. base, 56 sheets	10 10
Cokes, 195 lbs. base, 56 sheets	10 95

BLUE ANNEALED SHEETS.

Base per 100 lbs.	$4 00

ONE PASS COLD ROLLED BLACK.

No. 18-20 per 100 lbs.	$5 00
No. 22-24 per 100 lbs.	4 85
No. 26 per 100 lbs.	4 90
No. 27 per 100 lbs.	4 95
No. 28 per 100 lbs.	5 00
No. 29 per 100 lbs.	5 10

GALVANIZED.

No. 16 per 100 lbs.	$5 60
No. 18-20 per 100 lbs.	5 75
No. 22-24 per 100 lbs.	5 90
No. 26 per 100 lbs.	5 95
No. 27 per 100 lbs.	6 20
No. 28 per 100 lbs.	6 35
No. 30 per 100 lbs.	6 85

BAR SOLDER.

Warranted. 50-50 per 100 lbs.	25 50
Commercial. 45-55 per 100 lbs.	24 75
Plumbers per 100 lbs.	23 50

ZINC.

In Slabs	5 78

SHEET ZINC.

Cask lots, stock, 100 lbs.	11 00
Less than cask lots, 100 lbs.	11 50

BRASS.

Sheets, base	19¾c
Tubing, seamless, base	25½c
Tubing, brazed, base	28½c
Wire, base	19¼c

COPPER.

Sheets, Chicago base	23¾c
Mill Base	23c
Tubing, seamless, base	27c
Wire, No. 9 & 10 B. & S. Ga.	22½c
Wire, No. 11 B. & S. Ga.	22c

LEAD.

American Pig	6 65
Bar	7 75
Sheet. Full Coils per 100 lbs.	10 75
Cut Coils per 100 lbs.	11 75

TIN.

Pig Tin per 100 lbs.	38 50
Bar Tin per 100 lbs.	39 50

HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

ADZES.

Coopers'. Barton's	Net
White's	Net

AMMUNITION.

Shells, Loaded, Peters. Loaded with Black Powder	18%
Loaded with Smokeless Powder	18%
Winchester. Smokeless Repeater Grade	20 & 4%
Smokeless Leader Grade	20 & 4%
Black Powder	20 & 4%
U. M. C. Nitro Club	20 & 4%
Arrow	20 & 4%
New Club	20 & 4%
Gun Wads—per 1000. Winchester 7- 8 gauge	10&7½%
" 9-10 gauge	10&7½%
" 11-28 gauge	10&7½%

ASBESTOS.

Paper up to 1/16	6c per lb.
Rollboard	6¼c per lb.
Millboard 3/32 to ⅛	6c per lb.
Corrugated Paper (250 sq. ft. to roll)	$6.00 per roll

AUGERS.

Boring Machine	40&10%
Carpenter's Nut	50%
Hollow. Stearns, No. 4, doz.	$11 50
Post Hole. Iwan's Post Hole and Well	35%
Vaughan's, 4 to 9 in.	$15 60

AXES.

First Quality, Single Bitted (unhandled, 3 to 4 lb., per doz.	$14 00
Good Quality, Single Bitted, same weight, per doz.	13 00

BARS, CROW.

Steel, 4 ft., 10 lb.	$ 80
Steel, 5 ft., 18 lb.	1 40
Pinch bars, 5½ ft., 24 lb.	1 60

BARS, WRECKING.

V. & B. No. 12	$0 34
V. & B. No. 24	0 43
V. & B. No. 324	0 57
V. & B. No. 30	0 48
V. & B. No. 330	0 63

BITS.

All Vaughan and Bushnell. Screw Driver, No. 30, each	$ 27
Screw Driver, No. 1, each	16
Reamer, No. 80, each	41
Reamer, No. 100 each	41
Countersink, No. 13, each	20
Countersink, Nos. 14-15 each	27

BLADES, SAW.

Wood. Atkins 30-in.	6	40	26
Nos.	$8 90	$9 45	$5 40

BLOCKS.

Wooden	45%
Patent	45%

BLOW TORCHES (See Firepots).

BOARDS.

Stove.	Per Doz.
26x26, wood lined	$14 45
28x28, " "	16 95
30x30, " "	19 00
26x26, paper lined	8 15
28x28, " "	9 10
30x30, " "	10 80
Wash. No. 760, Banner Globe (single) per doz.	$5 25
No. 652, Banner Globe (single) per doz.	6 75
No. 801, Brass King, per doz.	8 25
No. 860, Single—Plain Pump	6 25

BOLTS.

Carriage, Machine, etc. Carriage, cut thread, ⅜x6 and sizes smaller and shorter	45-5%
Carriage sizes, larger and smaller and shorter	40-5%
Machine, ⅜x4 and sizes smaller and shorter	50%
Machine, sizes larger and longer than ⅜x4	40-10%
Stove	70-5%

BRACES, RATCHET.

V. & B. No. 444 8 in.	$4 54
V. & B. No. 222 8 in.	3 89
V. & B. No. 111 8 in.	3 55
V. & B. No. 11 8 in.	3 02

BURRS.

Copper Burrs only	30%

BUTTS.

Steel, antique copper or dull brass finish—case lots—3½x3½—per dozen pairs	$3 48
4x4 " " "	4 74
Heavy Bevel steel inside sets, case lots—per dozen sets	8 00
Steel bit keyed front door sets, each	2 00
Wrought brass bit keyed front door sets, each	4 00
Cylinder front door sets, each	8 50

CARRIERS.

Hay. Diamond, Regular each, net	
Diamond, Sling " "	

CATCHERS, GRASS.

Wire frame, adjustable bottom, white duck, for 12" to 16" mowers, dozen	$9 00
Same kind for 16" to 20".	10 50

CEMENT, FURNACE.

American Seal, 5 lb. cans, net	$ 45
" " 10 lb. cans, "	90
" " 25 lb. cans, "	2 00
Asbestos, 5 lb. cans "	45
Pecora per 100 lbs.	7 51

CHAINS.

Proof Coil, ⅜" 100 lbs.	$ 9 75
Amercain Coil	40-10%
Electric Cow Welded Ties No. 00, 4½, per doz.	3 00

CHIMNEY TOPS.

Iwan's Complete Rev. & Vent.	30%
Iwan's Iron Mountain only	35%

CHISELS.

Cold. V. & B. No. 25, ¼ in., each	$0 26
V. & B. No. 25, ⅜ in., each	41
Diamond Point. V. & B. No. 55, ¼ in.	0 31
V. & B. No. 55, ½ in.	0 48
Firmer Bevelled Round Nose. V. & B. No. 65, ¼ in.	0 29
V. & B. No. 65, ½ in.	0 40
Socket Firmer. Cape. V. & B. No. 50, ⅜ in.	0 31
V. & B. No. 50, ¾ in.	0 57

CHUCKS, DRILL.

Goodell's, for Goodell's Screw Drivers	List less 35-40%
Yankee, for Yankee Screw Drivers	$6 00

CLAMPS.

Adjustable. Martin's	30%
No. 63. Screw	20%
No. 100, Door (Stearns) doz.	$22 00
Carpenters'. Steel Bar..List price plus	20%
Carriage Makers'. 2½-inch per doz.	$ 7 00
5 - " "	14 00
8 - " "	28 00
12 - " "	42 00
Hose. Sherman's brass, ¾-inch per doz.	$0 48
Double, brass, ¾-inch, per doz.	1 20

CLIPPERS.

Bolt (Carolus). No. 0	$2 50
No. 1	3 25
No. 3	4 25

CLIPS.

Damper. Acme, with tail pieces, per doz.	$1 25
Non Rivet tail pieces, per doz.	25
Non Rivet Clips	90
Hame	55

COPPERS—Soldering.

Pointed Roofing.	
3 lb. and heavier per lb.	40c
2½ lb. "	45c
2 lb. "	48c
1½ lb. "	55c
1 lb. "	60c

CORD.

No. 7 Std. per doz. banks	$10 80
No. 8 " " " "	12 50

COUPLINGS, HOSE.

Brass per doz.	$2 25

CUT-OFFS

Standard gauge	35%
26 gauge	20%
Kuehn's Korrekt Kutoffs: Galv., plain, round or cor. rd.	
Standard gauge	40%
26 gauge	10%

DAMPERS, STOVE PIPE.

Diamond. 6-inch per doz.	$1 65
Cast "American." 6 inch per doz.	$1 55
7 " " "	2 25
8 " " "	3 65
9 " " "	5 30
10 " " "	6 60
12 " " "	8 00
Check. 7 inch, each	$1 00
8 " "	1 25
9 " "	1 50
10 " "	1 75
12 " "	2 25
Hot Air	40-10%

DIGGERS.

Post Hole. Iwan's Split Handle (Eureka) 4-ft. Handle...per doz.	$14 00
7-ft. Handle...per doz.	36 00
Iwan's Hercules pattern, per doz.	14 90

DRILLS.

V. & B. Star, 12-inch Length. ¼, 5/16 and ⅜, each	$ 25
⅝, each	36
1, each	54
1¼, each	81
V. & B. Star, 18-inch Length. 5/16 and ⅜, each	$ 33
⅝, each	45
1, each	69
1¼, each	1 05

EAVES TROUGH.

Milcor	
Galv. Crimpedge, crated	70-5%

ELBOWS—Conductor Pipe.

Galvanized Steel, Tin and Terne Plain Round or Round Corrugated	
2 to 6 inch, Std. gauge	60%
2 to 6 inch, 26 gauge	40%
2 to 6 inch, 24 gauge	10%
Milcor	
Galv., plain or corrugated, round flat. Crimp, Std. gauge	60%
26 Gauge Std. gauge	40%
24 Gauge Std. gauge	10%
Square Corrugated. Standard gauge	45%
26 gauge	30%
Milcor	
Standard gauge	45%
26 gauge	30%
Portico Elbows. Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested	70 & 5%
Nested solid	70 & 5%

ELBOWS—Stove Pipe.

1-piece Corrugated. Uniform.	Doz.
5-inch	$1 45
6-inch	1 60
7-inch	2 10
Special Corrugated.	**Doz.**
6-inch	$1 45
7-inch	1 75

Terne Plate Specialists

Since the beginning of the industry in this country.

Write for samples.

Our Brands

shown here ranging from 40 to 8 pound have proven their unusual lasting qualities by years of actual service.

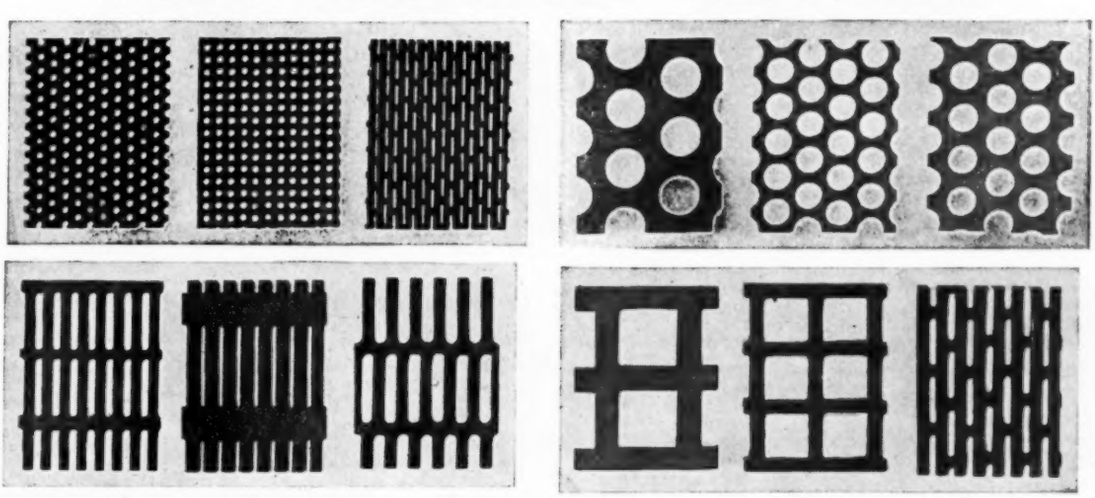
A LARGE stock of all brands always carried in stock for immediate shipment. Also manufacturers of "Osborn Quality" Gutter and Conductor, 28 gauge being our standard

Let us quote on your requirements.

THE J. M. & L. A. OSBORN CO., CLEVELAND

Sheet Metal Workers' and Furnacemen's Supplies

PERFORATED METALS



PERFORATED STEEL—COPPER—BRASS—BRONZE—ALUMINUM—ZINC—TIN PLATE and all other metals
For Screening and Sizing STONE—GRAVEL—SAND—COAL—all minerals—GRAIN and anything to be screened.
For DRYING FLOORS AND DECKS—VENTILATORS—DRAINS—ETC.
GRILLES—REGISTER FACES and ORNAMENTAL SCREENS.

Perforated Tin and Brass always in stock.

THE HARRINGTON & KING PERFORATING CO.

610 NORTH UNION AVE., CHICAGO, ILL., U. S. A.
NEW YORK OFFICE, 114 LIBERTY ST.

Uniform, Collar Adjustable.

	Doz.
5-inch	$2 00
6-inch	2 10
7-inch	2 60

WOOD FACES—50% off list.

FENCE.

Field Fence	60½
Lawn "	53%

FILES AND RASPS.

Heller's (American)	65-5%
American	65-5%
Arcade	60 & 10%
Black Diamond	50-5%
Eagle	60-10%
Great Western	60 & 10%
Kearney & Foot	60 & 10%
McClellan	60 & 10%
Nicholson	50-10%
Simonds	60%

FIRE POTS.

Ashton Mfg. Co.
Complete line Firepots and Torches...52%

Otto Bernz Co.

No. 1 Furn. Gasolene with large shield, 1 gal.	$ 6 75
No. B Furn. Kerosene, 1 gal.	15 12
No. 10 Brazier, Kerosene or Gasolene, 10 gals.	47 52
No. 5 Torch, Gasolene or Kerosene, 1 pt.	7 92
No. 83 Torch, Gasolene, 1 quart	5 40
No. 86 Torch, Gasolene, 1 pt.	4 05

Clayton & Lambert's.
East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 52%
West of above boundary line.43%

Geo. W. Diener Mfg. Co.	Ea.
No. 02 Gasolene Torch, 1 qt.	$ 5 55
No. 0250, Kerosene or Gasolene Torch, 1 qt.	7 50
No. 10 Tinners' Furn. Square tank, 1 gal.	12 60
No. 15 Tinners' Furn. Round tank, 1 gal.	12 00
No. 21 Gas Soldering Furnace	3 60
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.
Gasolene, Nos. 25 and 35...60%

Quick Meal Stove Co.
Vesuvius, F.O.B. St. Louis 30% (Extra Disct. for large quantities)

FREEZERS—ICE CREAM.

Peerless and Alaska	
1 quart	$2 95
2 quart	3 45
3 quart	4 10
White Mountain	
½ quart	$3 50
1 quart	4 90
2 quart	5 70

GALVANIZED WARE.

Pails (Competition), 8-qt.	$2 20
10-qt.	2 50
12-qt.	2 75
14-qt.	3 00
Wash tubs, No. 1	7 25
No. 2	8 00
No. 3	9 25

GARAGE DOOR HARDWARE.
Stanley ....All net

GAUGES.
Marking, Mortise, etc.....Nets

Wire.
Disston's 25%

GIMLETS.
Discount ....65% and 10%

GLASS.
Single Strength, A and B, all sizes ....83 & 85%
Double Strength, A, all sizes 84%

GREASE, AXLE.

Frazers'	
1-lb. tins, 36 to case, per case	$ 4 70
3-lb. tins, 24 to case, per case	7 80
5-lb. tins, 12 to case, per case	7 20
10-lb. tins, per dozen	10 40
15-lb. tins, per dozen	13 80
25-lb. tins, per dozen	19 80

HAMMERS, HANDLED.

	Each, net
All V. and B.	
Blacksmiths' Hand, No. 0, 26-oz.	$1 00
Engineers' No. 1, 26-oz.	1 00
Farrier's, No. 7, 7-oz.	93
Machinists', No. 1, 7-oz.	78
Nail.	
Vanadium, No. 41, 20-oz. each	1 45
Vanadium, No. 41½, 16-oz., each	1 45
V. & B., No. 11½, 16-oz. each	1 04
Garden City, No. 111½, 16-oz., each	87
Tinner's Riveting, No. 1, 8-oz., each	82
Shoe, Steel, No. 1, 18-oz., each	65
Tack.	
Magnetic. No. 5, 4-oz., each	72

HAMMERS, HEAVY.

Farrier's	20%
Mason's. Single and Double Face	50%

HANDLES.

Axe.	
Hickory, No. 1....per doz.	3 00
Hickory, No. 2.... "	4 00
1st quality, second growth	6 00
Special white, 2nd growth	4 50
Chisel.	
Hickory, Tanged, Firmer Assorted ....per doz.	55c
Hickory, Socket, Firmer, Assorted ....per doz.	70c
File....per doz.	$1 20
Hammer and Hatchet.	
No. 1 per doz.	$0 90
Second growth hickory, per doz.	1 40
Soldering.	
Per doz.	$2 40

HANGERS.

Conductor Pipe. Milcor Perfection Wire	25%
Eaves Trough.	
Steel hangers	30%
Triple Twist wire	10%
Milcor Eclipse Wire	20%
Milcor Triplex Wire	15%
Milcor Milwaukee Extension	15%
Milcor Steel (galv. after forming) List plus	12½ %
Milcor Selflock E. T. Wire, List plus	40%

HASPS.
Hinge, Wrought, with staples, Net

HATCHETS.

V. and B. Supersteel.	Each
Broad, No. 1, 24-oz.	$1 43
Broad, No. 3, 32-oz.	1 78
Half, No. 1, 15-oz.	1 25
Half, No. 2, 27-oz.	1 87
Claw, No. 1, 19-oz.	1 31
Claw, No. 2, 25-oz.	1 87
Flooring, No. 1, 20-oz.	1 43
Flooring, No. 2, 24-oz.	1 60
Shingling, No. 1, 17-oz.	1 20
Shingling, No. 2, 23-oz.	1 25
Lathing, No. 1, 14-oz.	1 20
Lathing, No. 2, 17-oz.	1 25
Vanadium Steel.	
Half, No. 62, 22-oz.	$1 82
Underhill Pattern Lathing, 9 row, 19-oz.	2 29

HINGES.

Heavy Strap, in Bundles.	
4 inch, dozen prs.	$1 12
5 " " "	1 57
6 " " "	1 93
8 " " "	3 95
Extra Heavy T in Bundles.	
4 inch, dozen prs.	$1 74
5 " " "	1 85
6 " " "	2 31
8 " " "	3 95

HOES.
Garden ....Net

HOOKS.

Box. V. and B. No. 9, each	$0 26
Conductor.	
Conductor Hooks	20-10%
Milcor	
"Direct Drive" Wrought Iron for wood or brick	15%
Cotton. V. and B. No. 8, each	24
Hay. V. and B. No. 1, each	26
Bar Meat. V. and B. No. 26, ¾", each	09
V. and B. No. 28, ½", each	16
Screw Meat. V. and B. No. 2, per gro.	6 50
Butchers' "S."	
V. and B. No. 6, each	08
V. and B. No. 8, each	11

HOSE.

	Per. Ft.
¾-in. 2 ply molded	9½c to 12¾c
¾-in. cord	8½c to 10c
¾-in. wrapped	13½c

IRONS.

Sad. Genuine Mrs. Potts, nickel plated, per set	$1 55
Asbestos No. 70, per set.	2 10
Asbestos No. 100, per set.	2 30
E. C. Stearns'. No. OA Corner, doz. sets	$2 50
No. OB " " "	2 75

KNIVES.

Beet Topping. Clyde, 9-in. Scimitar Blade, doz.	25%
California	25%
Butcher. Beechwood Handles, 6-inch blade	35%
Beechwood Handles, 7-inch blade	25%
Beechwood Handles, 8-inch blade	25%
Cooper's Hoop.	25%
Drawing. Standard	25%
Adjustable	25%
Barton's Carpenters'	25%
Hay. Iwan's Solid Socket	25%
Heath's	25%
Iwan's Sickle Edge	25%
Iwan's Imp'd Serrated	25%
Hedge. Challenge	25%
Disston's No. 1	25%
Putty. Common	25%
Lander's	25%
Scraping. Beech Handles	25%
Lander's	25%

KNOBS.

Door. Mineral ....per doz.	$2 00
Porcelain .... "	2 00
Jet .... "	2 00

LADDERS.

Step. Common, per ft.	28c
Common, with Shelf, add 10c	
IXL	34c
Challenge, 6 to 9 ft.	55c
10 to 16 ft.	60c

LANTERNS.

	Per doz.
Monarch tin, hot blast	$ 8 25
Dietz No. 2, cold blast	13 00
Best tubular	8 25
Competition lanterns No. 0 tubular	6 90

LAWN MOWERS.

12-inch	$5 20
16-inch	5 85
Ball Bearing. 4 blade, adjustable bearing.	
14"	$7 50
16"	7 80

LEATHER BELTING.

From No. 1 Oak Tanned Butts.	
Extra heavy, 18-oz.	35%
Heavy, 16-oz.	40%
Medium, 14½-oz.	40%
Light, 13-oz.	50%

LEATHER LACING.
Cut, strictly No. 1....45%

LEVELS.

Disston, No. 28 Asst.	$22 05
" No. 18, 20 in., each	1 83
" No. 22, 24 in., each	2 40
" Shafting, 6 in.	19 80
" " 6 in. gr. glass	24 20
" No. 1 Asst.	5 75
" No. 2 Asst.	12 40
" 24-26 in., each	1 02
" 28-30 in., each	1 00

LIFTERS.

Stove Cover. Coppered ....per gro.	$6 00
Alaska .... "	4 75

LOCKS.

Barn Door. No. 60 Stearn's..per doz.	$11 00
No. 80 " "	20 00

MALLETS.

Carpenters'. Fibre Head No. 2, per doz.	$12 00
" No. 3, "	15 50
" No. 3½, "	20 50
Round Hickory ....per doz.	$3 00— 5 00
Tinners'. Hickory ....per doz.	$2 25

MATS.
Door. National Rigid....5 & 10 & 5%
Acme Steel Flexible....50%

MITRES.
Galvanized steel mitres, and caps, end pieces, outlets...30%
Milcor ....
Galv. one piece stamped....40%

MOPS.
Cotton, Star (Cut Ends).

Pounds	12'	15'	18'	24'-3-oz.
Per doz.	$4 00	4 35	5 50	7 00

Enterprise 16¾%
Parker ....50 & 5%

NAILS.

Cut Steel	$4 70
Cut Iron	4 70
Wire. Common	3 80
Cement Coated. Small Lots	2 30
Horseshoe.	
Ausable	55 & 5%
Capewell	15%
Perfect	55 & 5%
Putnam	20 & 5%
Star	30 & 5%

NETTING, POULTRY.
Galvanized before weaving 45-10%
Galvanized after weaving 45%

NIPPERS.

Nail Cutting. V. & B. No. 30	78c
Double Duty. V. & B. No. 60	76c
Hoof. Heller's ....40 & 10%	
V. & B. No. 52, each	$2 25

NOZZLES.

Hose. Magic ....per doz.	$9 50
Diamond .... "	5 75

OILERS.

Chase Pattern. Brass and Copper	10%
Zinc Plated	40 & 5%
Railroad. Brass	20 & 5%
Coppered	50 & 5%
Steel. Copper Plated	70 & 5%

OPENERS.

Delmonico ....per doz.	$1 30
Never Slip .... "	65
Crate. V. & B...per doz.	$7 25—11 00

PAILS.

Cream. 14-qt. without gauge, ...per doz.	$9 50
18-qt. without gauge, ...per doz.	11 00
20-qt. without gauge, ...per doz.	11 75
Sap. 10-qt., IC Tin....per doz.	$4 00
12- " " "	5 50

Stock.

Galv. qts.	14	16	18	20
Per doz.	$9 75	10 75	12 75	14 50

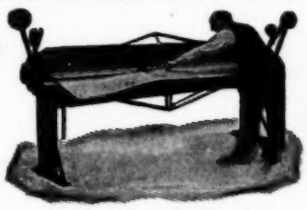
Water.

Galvanized qts.	10	12	14
Per doz.	$5 75	6 50	7 25

NEW CHICAGO ROTARY SLITTING SHEAR

Used in Connection with a Cornice Brake

Guaranteed to Cut 24-Gauge Iron



Will Split a Sheet or Cut Strips at Any Angle

Write now for information

MAPLEWOOD MACHINERY CO.

Dealers in New and Used Machinery

2547-49 Fullerton Ave. CHICAGO, ILL.

Leaders and Gutters Made From Horse Head Rolled Zinc last a life-time

The NEW JERSEY ZINC COMPANY

160 Front Street (Established 1848) New York

CHICAGO: Mineral Point Zinc Co.
PITTSBURGH: The New Jersey Zinc Co.
CLEVELAND: The New Jersey Zinc Sales Co.
SAN FRANCISCO: The New Jersey Zinc Sales Co.

The World's Standard for Zinc Products

CORTRIGHT METAL SHINGLE

BY hand-dipping Cortright Metal Shingles *after* they have been cut and stamped, we insure these shingles a zinc coating unbroken by any stamping operation.

CORTRIGHT METAL ROOFING CO.
Philadelphia *Chicago*

STANDARD SINCE 1887

Have you seen
THE BIG VENT
WITH THE GREAT PULL?

ÆOLUS VENTILATOR

RIGID — STRONG — DURABLE

Made in all sizes of all metals. They are reasonably priced and we make *quick* shipments.

ÆOLUS DICKINSON CO.
Vent Makers Since 1888
3332-3352 South Artesian Ave. CHICAGO, ILLINOIS
Telephone: Lafayette 1862-1863

C. G. HUSSEY & CO.

Rolling Mills and Office, PITTSBURGH, PA.

Manufacturers of

SHEET COPPER, BOTTOMS, ROLL COPPER, TINNED AND POLISHED COPPER, NAILS, SPIKES, RIVETS, CONDUCTOR PIPE, EAVES TROUGH, ELBOWS, SHOES, MITRES, ETC.

Branch Warehouses in New York Chicago and St. Louis

AREX

Arex Ventilators have the reputation of outlasting the building in most cases. Supplying such service on your contracts builds a good name for you plus larger profits.

AREX COMPANY
J. C. Kernchen, Pres.
1581 Conway Building, Chicago

THE ORIGINAL SIPHONAGE VENTILATOR

ILLINOIS ZINC COMPANY

ILLINOIS ZINC SHINGLES

THE ROOF THAT'S ALWAYS NEW

332 So. Michigan Ave., Chicago, Ill.
280 Broadway, New York City
1331 Filbert St., Philadelphia, Pa.
Smelters and Rolling Mills, Peru, Ill.
Established 1870

Plecker's Galvanized Eave Trough and Corrugated Expanding Conductors

Made of Keystone Copper Bearing Steel

Costs no more
Lasts Longer
Therefore
Cheaper

CLARK-SMITH HARDWARE CO. PEORIA, ILLINOIS

"THE STANDARD" VENTILATOR and CHIMNEY CAP

DOES away with high stacks, swings freely in the slightest breeze and positively cures down-drafts. The strongest and most efficient combination to be had. Has no equal for chimney purposes. All jobbers sell them—write your jobber or us for prices and catalog today.

Manufactured by
STANDARD VENTILATOR CO.
LEWISBURG, PA.

PAPER.

Roofing.	Per Square.
Best grade, slate surf. prepd.	$2 00
Best talc surfaced	2 25
Medium talc surfaced	1 60
Light talc surfaced	0 95
Red Rosin Sheathing, per ton	75 00

PARERS.

Apple.		
Goodell's	per doz.	$10 80
Turntable	"	11 40
White Mountain	"	8 40
Reading No. 78	"	11 40

PICKS.

Contractors' 40%
Railroad ....50 & 5%

PINCERS.

All V. & B.

Carpenters', cast steel, No.	6	8	10	12
Each	$0 43	$0 52	$0 61	$0 71

Blacksmiths', No. 10 ....$0 64

PINS.

Clothes.
Common, per box of 5 gro. $0 95

PIPE.

Conductor.
"Interlock" Galvanized.
Crated and nested (all gauges) 60-7½%
Crated and not nested (all gauges) 60-2½%
Square Corrugated A and B and Octagon.
29 Gauge 60-10%
28 " 60-10%
26 " 60-10%
24 " 60-10%
"Interlock."
Crated and nested (all gauges) 60-7½%
Prices for Galvanized Toncan Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application.

Stove.	Per 100 joints.
26 gauge, 5 inch E. C. nested	$16 00
26 gauge, 6 inch E. C. nested	17 00
26 gauge, 7 inch E. C. nested	19 00
28 gauge, 5 inch E. C. nested	14 00
28 gauge, 6 inch E. C. nested	15 00
28 gauge, 7 inch E. C. nested	17 00
30 gauge, 5 inch E. C. nested	12 00
30 gauge, 6 inch E. C. nested	14 00
30 gauge, 7 inch E. C. nested	16 00
T-Joint Made up, 6-inch	per 100 $40 00

Furnace Pipe.
Double Wall Pipe and Fittings 40%
Single Wall Pipe, Round Pipe Fittings 40%
Galvanized and Back Iron Pipe, Shoes, etc. 40%
Milcor, galvanized 40%

PLANES.

Stanley Iron Bench ....Net

PLIERS.

(V. & B.)

Nut, No. 3, each		$2 60
" No. 5, each		64
" No. 25, each		69
Gas, No. 7, each		55
" No. 8, each		61
" No. 12, each		87
Lining or Crimping. No. 35, each		64
Button's Pattern. No. 6 each		61
No. 8 each		74
Double Duty, No. 106		50

POINTS, GLAZIERS'.

No. 1, 2 and 3 per doz. pkgs. 65c

POKERS, STOVE.

Wr't Steel, str't or bent	per doz.	$0 75
Nickel Plated, coil handles	"	1 10

POKERS, FURNACE.

Each $0 50

PULLEYS.

Awning—Jap'd 10%
Clothes Line 10%

Hay Fork.

Iron Wheel, 5-in.	per doz.	$2 50
Wood Wheel, 6-in.	"	2 65
Wood Wheel, 6-in. pass knot	"	3 00

Sash.

Common ....Net
Common-Sense, 2-in. ....Net
Empire Pattern, 2-in. ....Net
Ideal ....Net
Steel ....Net

Furnace Regulator, doz. lots, per doz. $0 60

PUMPS.

Spray.		
Midget Junior	per doz.	$3 75
New Misty	"	6 00
Crescent	"	6 50

PUNCHES.

Machine.	Each.
V. & B., No. 11-13, 1½x6	$0 19
V. & B., No. 90, ⅝x9	27
V. & B., No. 10, ⅝x10	29
V. & B., No. 1-6, ½x6	12

Center.

V. & B., No. 50, ⅝x4 ....$0 14

Belt.

V. & B., No. 101-103 ....$0 24
V. & B., No. 103-109 33
V. & B., No. 25, ass't 3 30

PUTTY.

Commercial Putty, 100-lb. kits $3 55

QUADRANTS.

Malleable Iron Damper 10%

RAKES.

Garden.	Per doz.
Steel, Bow, 12-inch Teeth	$8 50
Steel, Bow, 14-inch "	9 25
Malleable Iron, 12-in. "	4 75
Malleable Iron, 14-in. "	5 00

Hay.

Wood, 10 Teeth $4 00

Lawn.

30 Teeth ....per doz. $5 50

RAZORS—SAFETY.

Gillette	per doz.	$45 00
Auto Strop	"	45 00
Gem	"	3 40
Gem (3 doz. lots)	"	3 00
Every Ready	"	3 40
Ever Ready (3 dz. lots)	"	3 00

RAZORS STRAIGHT.

RAZOR STROPS.

Star (Honing) 50%

FLOOR REGISTERS AND BORDERS.

Cast Iron 30%
Steel and Semi-Steel 40%
Baseboard 40%
Adjustable Ceiling Ventilators 40%

Register Faces—Cast and Steel

Japanned, Bronzed and Plated, 4x6 to 14x14 ....40%
Large Register Faces—Cast, 14x14 to 38x42 ....65%
Large Register Faces—Steel, 14x14 to 38x42 ....65%

REGULATORS.

T. & B. Furnace 40%

RIDGE ROLL.

Galvanized.
Milcor ....
Plain, crated 70-5%
Plain, bundled 70-5-2½%

RIVETS.

Tubular.
Nos. 1 and 2 assorted sizes, 50 in box ....doz. $ 75
Nos. 1 and 2 assorted sizes, 10 in box ....doz. 1 40

ROPE.

Cotton.
¼, 5-16 in. and larger, per lb. ....50c to 60c

Sisal.
1st Quality, base 14½c to 16½c
No. 2 ....13½c to 15c

Manila.
1st Quality standard brands ....18½c to 20½c
No. 2 ....17c to 18½
Hardware Grade, per lb. 17½c

SAWS.

Butchers'.

Atkins	No. 2, 14-in.	$12 75
"	No. 2, 18-in.	14 30
"	No. 7, 16-in.	15 85
"	No. 2, 22-in.	15 92
"	No. 7, 20-in.	18 05
"	No. 7, 24-in.	20 20
"	No. 7, 28-in.	22 35

Compass.

Atkins	No. 2, 10-in.	$ 5 45
"	No. 10, 10-in.	5 60
"	Blades, No. 2, 10-in.	3 25
"	" No. 2, 10-in.	3 30

Cross-Cut.

Atkins	No. 221, 4 ft.	$3 93
"	No. 221, 6-ft.	4 45
"	No. 221, 8-ft.	6 07

Hand.
Copper Burrs only 30%
" No. 96, 20-in. 21 70

Hand and Rip.

Atkins	No. 54, 20-in.	$19 50
"	No. 54, 26-in.	24 40
"	No. 53, 16-in.	18 10
"	No. 53, 20-in.	22 90
"	No. 53, 24-in.	26 60
"	No. 53, 28-in.	31 45
"	No. 53, 30-in.	34 15

Keyhole.

Atkins	No. 1, complete	$3 10
"	No. 2, complete	3 70

Miter Box.

Atkins	No. 1, 4x20	$32 65
"	No. 1, 5x22	38 00
"	No. 1, 6x22	42 20

Pruning.

Atkins	No. 20, 12-in.	$ 8 45
"	No. 10, 16-in.	13 15

Wood.

Atkins	No. 202	$ 7 19
"	No. 318	8 75
"	No. 906	15 50
"	No. 1509	16 56

SCRAPERS.

Box.
No. 6, six blades each 25c
Hog.
No. 6, each 25c
Floor (Stearns).
No. 10, each $11 50

SCREEN DOOR HINGES.

Cast Iron	gross	$13 00
Steel	"	9 50

SCREWS.

Jack ....Standard List 45%
gimlet pointed 50-5%
gimlet pointed 40-10%

Wood.
F. H. Bright 80%
R. H. Blued 78%
F. H. Jap'd 74%
F. H. Brass 76%
R. H. Brass 74%

Sheet Metal.
No. 7, ½x ⅛, per gross. $0 55
No. 10, ⅝x3/16, per gross. 75
No. 14, ⅜x ¼, per gross. 90

SCREW DRIVERS.

Uncle Sam Standard Head.

3 inches, each	$ 45
5 inches, each	52
8 inches, each	68
12 inches, each	1 02

Uncle Sam Insulated Head.

3 inches, each	$ 49
5 inches, each	57
8 inches, each	76
12 inches, each	1 14

SETS.

Nail.
V. & B.
No. 100, in cardboard boxes ....doz. $1 55
No. 100, in wooden boxes, ...doz. 1 55
No. 30, assorted ....doz. 39
No. 5, in cardboard boxes, ...doz. 1 35
No. 5, in wooden boxes, ...doz. 1 30

Rivet.
V. & B.
Farmers' $0 19
Tinners' 3-4 .... 0 40
" 00-0 .... 0 80

Saw.
Atkins No. 10 ....per doz. $3 30
" No. 12 .... " 6 30

SHEARS.

Nickel Plated, Straight,	Per Doz.
6"	$12 90
7"	14 35
8"	16 80
Japanned, Straight 6"	11 00
7"	12 40
8"	13 80

SHEAVES, SLIDING DOOR.

Common. Inches	3	4	5
Per set	$1 40	1 75	2 40

Hatfield's.
Per set $1 80 2 10 2 75 28

SHINGLES.

	Per Square
Zinc (Illinois)	$18 00

SHOES.

Milcor.
Galv. Std. Gauge, Plain or corg. round flat crimp 60%
26 gauge round flat crimp 40%
24 gauge round flat crimp 10%

Square Corrugated.
Standard gauge 45%
26 gauge 30%
Conductor 60%

SHOVELS AND SPADES.

Coal.
Hubbard's.

No.	A	B	C	D
1	$16 00	15 10	14 45	13 70
2	16 35	15 60	14 85	14 10
3	16 75	16 00	16 25	14 45
4	17 10	16 35	16 60	14 85

Post Drains & Ditching.
Hubbard's.

Size	A	B	C
14"	$17 15	$16 40	$15 65
16"	17 50	16 75	16 00
18"	17 85	17 10	16 35
20"	18 20	17 45	16 70
22"	18 55	17 80	17 05

Alaska Steel.
D-Handle ....per doz. $3 50
Long Handle .... " 3 00

SKATES.

Roller.
Ball Bearing—Boys' $1 65
Ball Bearing—Girls' 1 75

SNAPS, HARNESS.

Covered Spring ....Add 20%
Judd's Pattern Add 33 1-6% to list

SNATHS.

Double Ring Bush. per doz. $9 75
Patent Loop, Grass " 8 75
Patent Loop, Bush. " 10 00

SNIPS, TINNERS'.

Clover Leaf ....40 & 10%
National ....40 & 10%
Star 50%
Milcor ....Net

SPRINGS, DOOR.

Perfect.

Nos.	2	3	4	5	6	7
Per doz.	45c	50c	55c	65c	80c	90c

Reliance.

	Light	Medium	Heavy
Per doz.	$1 80	2 40	3 75

Torrey's ....per doz. 1 45

QUALITY & BEAUTY IN ART METAL CEILINGS *AND* SIDE WALLS

QUALITY—only first quality material is used in making **FRIEDLEY-VOSHARDT ART METAL CEILINGS AND SIDE WALLS.**

BEAUTY—is necessary for the ***complete*** and ***lasting*** satisfaction of your customers.

Having one of the finest equipped sheet metal plants in the country and employing only skilled workers enables us to serve you with ***QUALITY*** goods having the ***BEST DESIGNS.***

WRITE TODAY FOR CATALOG No. 33

FRIEDLEY-VOSHARDT CO.

OFFICE 733-737 S. Halsted St.
FACTORY 761-771 Mather St.
CHICAGO, ILLINOIS

THE DOUBLE NEEDLE TORCH HAS DOUBLE TORCH VALUE

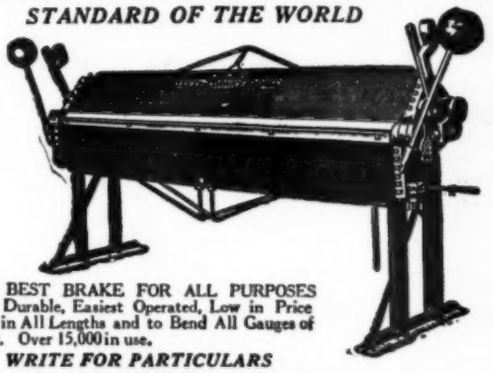
No. 208 Torch
List Price Each, $17.00
Ask for Discount

No. 208 Double Blunt Needle Torch is strongly built, produces 300 degrees more heat and saves time and fuel. Burns modern low grade fuels perfectly, either gasoline or kerosene. Upper Needle has wire tip which clears the gas orifice. Lower regulates flame. Burner can not be ruined by forcing the Needle as in other makes. Will outlast two ordinary Torches. Jobbers supply at factory prices. Catalog mailed upon request.

CLAYTON & LAMBERT MFG. CO.
10635 Knodell Ave. DETROIT, MICH., U.S.A.

CHICAGO STEEL CORNICE BRAKES

STANDARD OF THE WORLD



THE BEST BRAKE FOR ALL PURPOSES
Most Durable, Easiest Operated, Low in Price
Made in All Lengths and to Bend All Gauges of Metal. Over 15,000 in use.

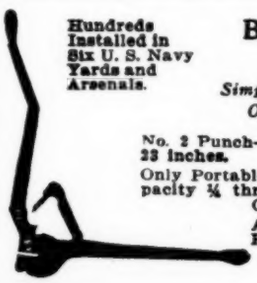
WRITE FOR PARTICULARS

DREIS & KRUMP MFG. CO., 2915 S. Halsted Street, CHICAGO

Hundreds Installed in Six U. S. Navy Yards and Arsenals.

Best by Test of Thirteen Years
Over 20,000 in use

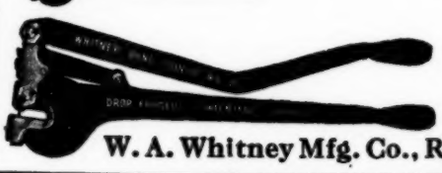
Simplest Construction, Fewest Parts, Easiest Operated and Changed. Made in 4 sizes.



No. 2 Punch—Capacity 5/16 thru ¼ Iron. Length 23 inches.

Only Portable Channel Iron Punch on Market. Capacity ¼ thru ¼ Iron. Punches to center of 4 inch Channel Iron, with 1½ inch flanges.

All parts interchangeable with No. 2 Punch. No. 3 Tinner's Punch—Capacity ¼ thru 18 gauge.



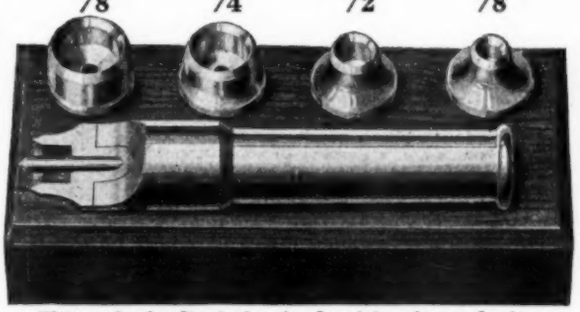
No. 1 Punch—Capacity ⅝ thru ¼ Iron.

Ask your Jobber, or write us.

W. A. Whitney Mfg. Co., Rockford, Ill.

TINNERS' HOLLOW PUNCH

7/8 3/4 1/2 3/8



Write today for discriptive circular giving sizes and prices

WHITNEY METAL TOOL COMPANY 93 Forbes Street Rockford, Illinois

No. 61 Red-Hot Fire Pot

Something Worth While

Our No. 61 Coil Fire Pot is the best and most Reliable Coil Fire Pot made. Tank is made of heavy gauge, seamless drawn steel, tinned inside and out, rust proof, fitted with extra large funnel and filler plug with dust proof cap. Every mechanic should have one of these fire pots.

Jobbers supply at factory prices.
Send for free catalog.

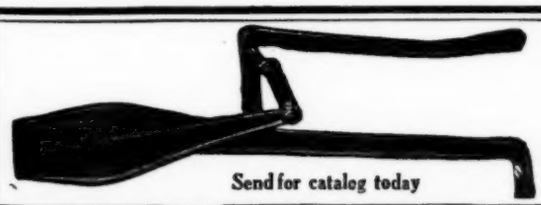
ASHTON MFG. COMPANY
Newark, N. J., U. S. A.

TREADLE SHEAR

This TREADLE GAP SHEAR is made in all standard sizes for No. 14 and lighter gauge sheets. With it, sheets can be squared, trimmed or slit.

We make a complete line of shears, punches and bending rolls, all sizes for hand or belt drive. Write for Catalog "S."

BERTSCH & COMPANY Cambridge City, Ind.



Send for catalog today

VIKING SHEAR

Compound LEVER Handle — Removable Blades

A child can work them

VIKING SHEAR CO., Erie, Pa.

SQUARES.

Steel and Iron.....Net
(Add for bluing, $3.00 per doz. net)
Mitre ..... "
Try ..... "
Try and Bevel..... "
Try and Mitre..... "
Fox's .....per doz. $6 00
Winterbottom's 10%

STAPLES.

Blind.
Barbed .....per lb. 21@22c
Butter, Tub..... " 16@19c
Fence—
Polished .....per 100 lbs. $5 45
Galvanized ... " 6 15
Netting.
Galvanized ...per 100 lbs. $6 54
Wrought.
Wrought Staples, Hasps and Staples, Hasps, Hooks and Staples, and Hooks and Staples .....50 & 10%
Extra heavy 35%

STONES.

Axe.
Hindostan .... per lb. New Nets
More Grite .... " "
Washita ..... " "
Emery.
No. 126.....per doz. New Nets
Oil—Mounted.
Arkansas Hard
No. 7.....per doz. New Nets
Arkansas Soft. " "
Washita No. 717 " "
Oil—Unmounted.
Arkansas Hard per lb. New Nets
Arkansas Soft. " "
Lily White.... " "
Queer Creek... " "
Washita ..... " "
Scythe.
Black Diamond per gro. New Nets
Crescent ..... " "
Green Mountain " "
LaMolle ..... " "
Extra Quinnebog ..... " "
Red End ..... " "

STOPS, BENCH.

No. 10 Morrill pattern .....per doz. $11 00
No. 11 Stearns pattern ..... " 10 00
No. 15 Smith pattern ..... " 7 00

STOPPERS, FLUE.

Common .....per doz. $1 10
Gem, No. 1..... " 1 10
Gem, flat, No. 3... " 1 00

STRETCHERS.

Carpet.
Bullard's .....per doz. $3 90
Excelsior ..... " 5 25
Malleable Iron.... " 70
Perfection ..... " 6 30
King ..... " 4 50
Wire.
O. S. Elwood, No. 1 per doz. Nets
O. S. Elwood, No. 2, " "

SWIVELS.

Malleable Iron.....per lb. $0 10
Wrought Steel.....per gro. 4 50

TACKS.

Bill Posters' 6-oz. 25-lb. boxes per lb. 15c
Upholsterers' 6-oz., 25-lb. boxes, per lb.....15½c

TAPES, MEASURING.

Asses' Skin .....List & 40%

THERMOMETERS

Tin Case...per doz. 80c & $ 1 25
Wood Backs " $2 00 & 12 00
Glass ..... " 12 00

TIES.

Bale.
Single Loop, carload lots .....75 & 7%
Single Loop, less than car lots .....70 & 15%

TRAPS.

Mouse and Rat.	Per Gross.
Sure Catch Mouse Traps.	$ 2 10
Vim Mouse Traps.....	2 10
Short Stop Mouse Traps.	1 80
Wood Choker Mouse Traps, 4 hole.....	10 25
	Per Doz.
Sure Catch Rat Traps....$0 90	
Dead Easy Rat Traps.... 1 00	

Baskets.

Packed in One Bushel Band Stave List per Bushel.
Sure Catch Mouse Traps (360 Traps) .....$ 5 25
Short Stop Mouse Traps (360 Traps.)..... 4 50
Sure Catch Rat Traps (54 Traps) 3 60
Short Stop Rat Traps (54 Traps) 3 15
Assorted Mouse and Rat Traps. List per Bushel.
Sure Catch (216 Mouse Traps and 26 Rat Traps) $4 90
Short Stop (216 Mouse Traps and 26 Rat Traps) 4 25

TROWELS.

Cement.
Atkins No. 6.....$19 50
" No. 9..... 25 50

TWINE.

White Cotton.
Eureka, 4-ply.....per lb. 30c
Jute.
3-ply and 6-ply Bale Lots 22½c

VALLEY.

Milcor .....
Galv. formed or roll.....50-7½%

VISES.

No. 700 Hand.			
Inches ...	4½	5	5½
Doz. $11 15	13 00	14 35	
No. 701.	In. 4	5	6
Doz. $11 15	13 00	16 70	

No. 1, Genuine Wentworth, Noiseless Saw...per doz. 9 25
No. 3, Genuine Wentworth, Noiseless Saw....per doz. 12 75
No. 500, All Steel Folding Saw .....per doz. 16 00

WASHERS.

Over ½ in. barrel lots per 100 lbs.....$6 25
Iron and Steel.

In.	5/16	⅜	½	⅝	¾
	10¼c	9¾c	7¾c	7½c	7 2/5c

WEATHER STRIPS.

Metallic Stitched.
½ in., per 100 ft.....$1 80
¾ in., per 100 ft..... 2 20
Wood and Felt.
⅝ in., per 100 ft.....$1 56
⅞ in., per 100 ft..... 1 56

WEDGES.

Ax. Per Doz. Nets.
Galling .....per lb. Nets
Saw .....per lb. 8½c

WEIGHTS.

Hitching .....per lb. Nets
Sash—f. o. b. Chicago
Smaller lots, per
Smaller lots, per ton.....$50 00

WHEEL BARROWS.

Common Wood Tray.....$3 00
Steel Tray, Competition.... 4 50
Steel leg, garden..... 5 00

WHEELS.

Carborundum 50%
Emery 60%
Well, Ins..... 8 10 12
Per doz.....$5 50 7 25 8 50
12-in. heavy hoisting, per doz. $25 00

WIRE.

Plain annealed wire, No. 8 per 100 lbs. $3 70
Galvanized barb wire, per 100 lbs. 4 10
Wire cloth—black painted, 12-mesh, per 100 sq. ft... 2 35
Cattle Wire—galvanized catch weight spool, per 100 lbs. 4 60
Galvanized Hog Wire, 80 rod spool, per spool..... 3 98
Galvanized plain wire, No. 9, per 100 lbs..... 4 15

WOOD FACES.

50% off list.

WRENCHES.

Coes Steel Handle,	6-in..	40-10%
" " "	8-in..	40-10%
" " "	10-in..	40-10%
" " "	12-in..	40-10%
Coes Knife-Handle,	6-in..	40-10%
" " "	8-in..	40-10%
" " "	10-in..	40-10%
" " "	12-in..	40-10%

Coes All Patterns.....40-10%

WRINGERS.

No. 790, Guarantee	per doz.	$49 50
No. 770, Bicycle ...	"	47 00
No. 670, Domestic..	"	43 50
No. 110, Brighton...	"	39 00
No. 750, Guarantee..	"	51 00
No. 740, Bicycle....	"	48 50
No. 22, Pioneer....	"	35 50
No. 2, Superb.....	"	25 50

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FEDERALITE FINISHES

White Enamels That Possess Lasting Qualities

WHEN it comes to selling your customers White Enamel you have to choose your lines carefully if you are to give the satisfaction demanded. It is common for White Enamels to turn **yellow, to crack** and to **lose luster.**

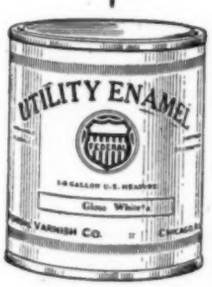
Federalite and Federal White Enamels and Flat White Finishes are all made to meet individual and exact requirements.

With the Federal complete line in stock you can serve your trade with their particular needs—make good profits and give satisfaction.

The reason why Federal Enamels possess lasting qualities is that we pay particular attention to small but important details in making Federal Enamels as well as using only high quality ingredients.

Federalite Coaters and Oil Stains also have special service features that make them superior products.

Let us send you descriptive catalog giving full details—also our dealer helps and prices.



Federal Varnish Company

2837-55 Irving Park Blvd. CHICAGO, ILLINOIS

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Bertsch & Co., Cambridge City, Ind.

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Quincy Pattern Co., Quincy, Ill.
Vedder Pattern Works, Troy, N. Y.

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Henry Furnace & Fdy. Co., Cleveland, Ohio
Lamneck Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Quick Furnace & Supply Co., Des Moines, Iowa
Red Front Furnace & Supply Co., Chicago, Ill.
Standard Furnace & Supply Co., Omaha, Neb.

Pipe and Fittings—Stove.

Excelsior Steel Furnace Co., Chicago, Ill.
Hemp & Co., St. Louis, Mo.
Meyer & Bro. Co., F., Peoria, Ill.
Sullivan-Geiger Co., Indianapolis, Ind.

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Berger Bros. Co., Philadelphia, Pa.
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Whitney Metal Tool Co., Rockford, Ill.

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Whitney Metal Tool Co., Rockford, Ill.

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Whitney Metal Tool Co., Rockford, Ill.

Ranges—Combination Gas & Coal.

American Stove Co., St. Louis, Mo.
Malleable Iron Range Co., Beaver Dam, Wis.
Quick Meal Stove Co., St. Louis, Mo.

Real Selling Helps Free.

We will send you a large attractive four-color window display card, a four-color window transfer and also a supply of interesting booklets for distribution to people in your district. Ask us about them TODAY.

Haven't you had customers ask you for a good varnish?

AND did you have to tell them you didn't sell varnishes?

Most hardware stores carry a line of paints and varnishes and you can, too.

Ar-Ki-Teck Spar Varnish is the ideal brand of varnish for the hardware dealer because *the one grade is suitable for all purposes.*

It's the one high grade varnish you can sell your customers with assurance that it will give the utmost satisfaction no matter on what kind of job they use it.

If you will send us your name and address we will be glad to tell you in detail how you can sell Ar-Ki-Teck Spar Varnish **now** with good profits.

J. B. Cornish & Company

Northeast Corner State and Lake Streets

Chicago, Illinois

GARDEN TOOLS, GENERAL AND BUILDERS' HARDWARE, MECHANICS' TOOLS, CUTLERY, GUNS, AMMUNITION, SPORTING GOODS AND FISHING TACKLE.

WHEN John Jones comes into your store to buy something you're out of —don't tell him you haven't got it— tell him you can get it for him promptly.

We make a specialty of supplying quality goods at right prices at the time you want them.

Get our prices now on your next order.

BULLARD & GORMLEY CO.

Wholesale Hardware

54-62 East Lake Street

CHICAGO, ILLINOIS

Ranges—Gas.
American Stove Co., St. Louis, Mo.
Clark & Co., Geo. M., Chicago, Ill.
Dangler Stove Co., Cleveland, O.
Quick Meal Stove Co., St. Louis, Mo.

Rasps.
Heller Bros., Newark, N. J.

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Hall-Neal Furnace Co., Indianapolis, Ind.

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Dunning Heating & Supply Co., Milwaukee, Wis.
Excelsior Steel Furnace Co., Chicago, Ill.
Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Majestic Co., Huntington, Ind.
Quick Furnace & Supply Co., Des Moines, Iowa
Red Front Furnace & Supply Co., Chicago, Ill.
Rock Island Register Co., Rock Island, Ill.
Standard Furnace & Supply Co., Omaha, Neb.
Stearns Register Co., Detroit, Mich.
Tuttle & Bailey Mfg. Co., Chicago, Ill.
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St. Louis Technical Institute, St. Louis, Mo.
Zideck Auto Radiator School, New York, N. Y.

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Marshalltown Mfg. Co., Marshalltown, Iowa
Viking Shear Co., Erie, Pa.

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Inland Steel Co., Chicago, Ill.
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Osborn Co., The J. M. & L. A., Cleveland, Ohio
Taylor Co., N. & G., Philadelphia, Pa.

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Merchant & Evans Co., Philadelphia, Pa.

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Merchant & Evans Co., Philadelphia, Pa.
Taylor Co., N. & G., Philadelphia, Pa.

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Burton Co., W. J., Detroit, Mich.
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Taylor Co., N. & G., Philadelphia, Pa.

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Bernz Co., Otto, Newark, N. J.
Burgess Soldering Furnace Co., Columbus, Ohio
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Double Blast Mfg. Co., North Chicago, Ill.
Hones, Inc., Chas. A., Baldwin, Long Island, N. Y.
Quick Meal Stove Co., St. Louis, Mo.

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Hessler Co., H. E., Syracuse, N. Y.
Hyfield Mfg. Co., New York, N. Y.
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Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.

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Quick Meal Stove Co., St. Louis, Mo.

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Indiana Stove Works, Evansville, Ind.
National Stove Co., Lorain, Ohio
New Process Stove Co., Cleveland, Ohio
Quick Meal Stove Co., St. Louis, Mo.
Reliable Stove Co., Cleveland, Ohio

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Sullivan-Geiger Co., Indianapolis, Ind.

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American Steel & Wire Co., Chicago, Ill.

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Honeywell Heating Specialties Co., Wabash, Ind.

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Cortright Metal Roofing Co., Philadelphia, Pa.
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Milwaukee Corrugating Co., Milwaukee, Wis.

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Milwaukee Corrugating Co., Milwaukee, Wis.
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Lovell Mfg. Co., Erie, Pa.

Zinc.
Illinois Zinc Co., New York, N. Y.
Merchant & Evans Co., Philadelphia, Pa.
New Jersey Zinc Co., The, New York, N. Y.

Zinc—Slab.
Illinois Zinc Co., New York, N. Y.